



# SUPPLY STARVED ITALY TO SEND SHIPS FOR UK MACKEREL

**Trade mission finds Italian market wide open**

ITALY is planning to base freezer trawlers off the south-west coast of England this winter to take mackerel caught by British vessels.

Last year, the Tontini concern at Anzio sent a freezer to British waters as a pilot operation. This proved fairly successful and two vessels with a combined processing capacity for 120 tonnes a day will be on the mackerel grounds this season.

With imports from Japan and Korea

## SOVIET LINK-UP FOR SWEDISH FISH FIRM

JOINT Trawlers Ltd., the Swedish-based headquarters of the Joint Trawler Group, has established a joint venture with V/O Sovrybifot, the Soviet Central Organisation for Administration of Fisheries.

The new company, to be called Segrus Marine Nutrition AB, is 50 per cent owned by Joint Trawlers.

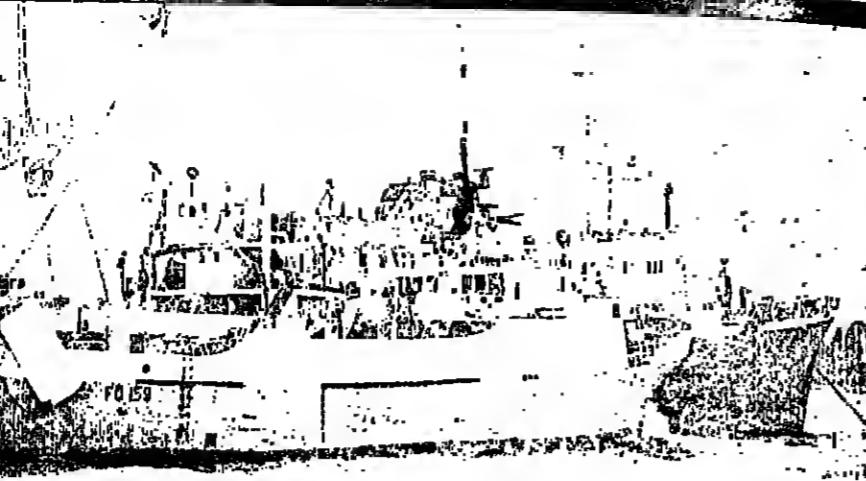
becoming difficult through the introduction of 200-mile limits, Italy faces a supply problem. In 1976 Italian fish imports for human consumption were running at 252,400 tonnes and the country had a fish trade gap of £173 m.

The market is wide open for a variety of fish and a British export mission to Italy, last month — organised by the White Fish Authority — found a big demand for its products — especially in frozen form.

The visit revealed an almost insatiable Italian appetite for scampi. There was also a lively interest in mackerel, sole, squid, monkfish and cuttlefish.

One big surprise for the British exporters was the size of fish being handled in Milan, Genoa and Rome: frozen mackerel at 10 to the kilo, sole down to 3½ in and squid 1½ in the body would have little chance of finding a buyer in Britain.

A big hazard for the British team in supplying fresh fish to Italy is the long four-day road journey.



"Assunta Tontini Madre" off to process British mackerel.

## Feeding the red fleet

Also on the mackerel scene off the South-west of England this year are big factory ships from Eastern Europe. Here the Fleetwood-based stern trawler Jacinta is seen transhipping a catch off the port of Falmouth last month.

There have been complaints that a ship belonging to the state-owned Shipping Corporation of India (SCI) was held in Bombay — an acutely congested port — for 55 days with frozen seafood on board.

The ship, the Vishva Amber, reached Marseilles four months after loading. Her frozen cargo was found to be damaged and complaints were received from European buyers.

According to the ship's surveyors, the cargo was delivered to the vessel at temperatures ranging from minus 12 to plus two degrees Centigrade. SCI claims the carrying temperature on the ship was minus 20 degrees throughout the voyage.

One of the few small herring fisheries still open is on the Clyde, in Scotland, and the EEC is trying to force the British Government to close this down.

The main European herring fisheries — in the North Sea and off the west coast of Scotland — are already closed. The EEC is also restless about this situation and aims to take action based on evidence to be published shortly by ICES scientists.

British fisheries minister John Silkin remains unmoved by this latest threat from his "purrs" in Europe.

He is expected to refuse to lift the conservation measures, in the knowledge that it could be two years before any court action takes place. By this time, it is anticipated that even the slow moving EEC will have sorted out a fishing policy.

According to latest reports, there now seems some haste to get the Common Fisheries Policy issue settled before the German presidency of the European Council of Ministers ends on December 31.

Both the Germans and Mr. Silkin have been making confident predictions of a settlement within the next month.

Improve shipping or lose markets, warn exporters

DETERIORATION of shipping services for frozen marine products from the west coast of India to European ports is hampering India's fish exporters.

Representatives of the exporters and European buyers have warned in Bombay that if the government does not act in time to provide efficient shipping services, hard-won European markets will be lost.

The long-standing row among EEC countries over settling an internal fisheries policy has reached the stage of legal action. Eight member states have decided jointly to take Britain to the European Court over its unilateral action on conservation.

The move is intended to force Britain to lift four measures which include: an extension of the Norway quota restriction; 70 mm net mesh restriction for nephrops; and bans on herring fishing off the Isle of Man and Northern Irish coasts.

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## US order for 16 shrimpers

SAHLMAN Seafoods of Tampa, Florida, is to add 16 new vessels to its shrimp fleet — the largest in the United States. All 16 boats will be powered by Cummins six-cylinder marine diesels.

The vessels are to be built at the newly expanded facilities of Steiner Shipyard, Inc., in Bayou La Batre, Alabama, and the first, the High Noon, is due for delivery this autumn.

The shrimp trawlers will have a length of 75 ft, breadth of 22 ft and midships depth of 11 ft.

Fuel and freshwater capacities will be 18,000 gallons and 2,000 gallons, respectively.

## CUBA LOSES PERU HAKE CONTRACT

PERU has cancelled a fishing agreement with Flocuba which allowed three Cuban factory ships to work Pacific hake in Peruvian waters reports *FNI* correspondent DOREEN GILLESPIE.

A spokesman for Epsesep, the state food fish company, said that in future trawling will be handled by local groups.

Peru recently renewed a similar agreement with Rybex of Poland which operates an average of five factory ships in Peruvian waters.

The Flocuba contract, signed in June 1973, split the catch equally between Peru and Cuba, with most of the fish going for export. Flocuba trawlers landed 40,000 metric tons in 1977.

According to reports in the local press, two Peruvian fishing companies are to form a mixed company with Pesquerias Espanolas de Bacalao of Spain which is to bring in two factory ships this month.

## EEC to put Britain in court

## Fifteen sign up for new 'NAFO'

THE European Economic Community was one of 15 signatories to the new multilateral convention setting up the Northwest Atlantic Fisheries Organization (NAFO) in Ottawa last month.

The Convention replaces the International Convention for Northwest Atlantic Fisheries (ICNAF) which had become outdated following the 200-mile limits.

Provided there are enough ratifications NAFO will come into force on January 1, 1979.

The EEC's decision to join NAFO follows the settlement of a problem with Canada concerning the allocation of catches in waters beyond the 200-mile limit off the Grand Banks and the Flemish Cap.

The Canadians have assured the EEC that the special quota rights the Community enjoys in this area do not set a precedent for the allocation of quotas in other areas.

One significant point is that the USSR, which does not officially recognise the EEC and with whom it has no fishing relations, has accepted Community membership of NAFO.

The 15 members of NAFO are: Bulgaria, Canada, Cuba, Denmark (Faeroe Islands), the EEC, German Democratic Republic, Iceland, Japan, Norway, Poland, Portugal, Romania, Spain, USSR and the USA.

## Norway meal all sold

PRACTICALLY the whole year's production of Norwegian fishmeal and oil has already been sold, according to Carl S. Arnesen, managing director of Norsildmel. But little profit has been made because of a tremendous slide recently in the prices of cepelin products.

The problem at the moment is moving the meal and oil before the winter cepelin season. Buyers are slow to take out their stocks at this time of the year when contracts can call for deliveries as late as next March.

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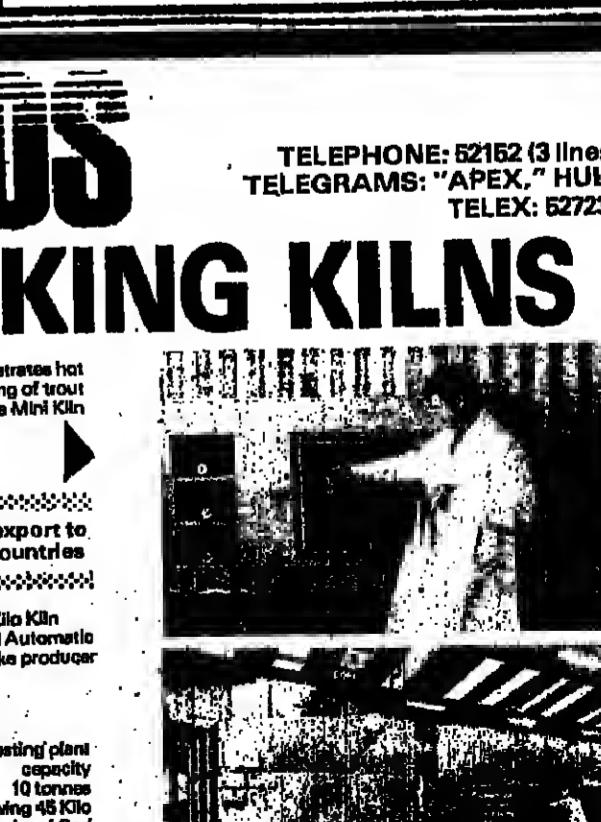
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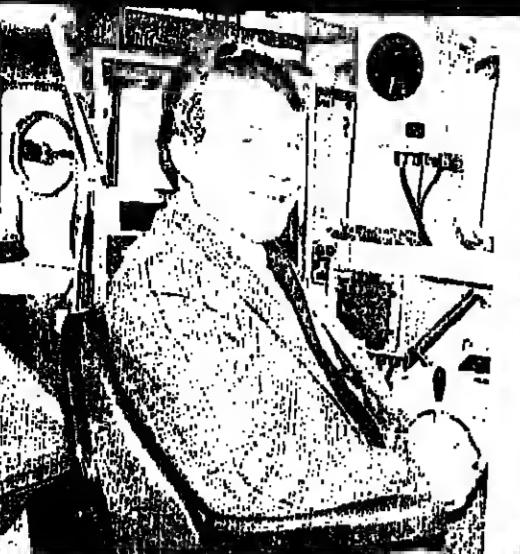
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## British port lifts three year landings ban, and...



**Smiling skipper**  
Trygvi  
Gunnarsson: Glad  
to be back in  
Grimsby.

ICELAND came back in style to the English east-coast port of Grimsby last month.

Following the lifting of a three-year ban on the offloading of Icelandic trawlers by the Grimsby 'lumpers', the 155 ft (47.3 metre) *Brettingur* sailed in to earn £66,936

## Iceland comes back with a bang!

The *Brettingur*: a welcome landing.

for 258,000 lb of quality wet fish.

This was the first Icelandic landing at the Humberside port since the end of the 'cod war' between the two countries and was easily the best, grossing there by any vessel this year.

The *Brettingur*'s skipper, Trygvi Gunnarsson, was delighted with the outcome:

He told *Fishing News International* that he had been to Grimsby many times before and that he had many friends there.

Skipper Gunnarsson, who has commanded the five-year-old Japanese-built trawler since she was new, said that he made the catch in ten days south-east of 'Kidney Bank'. Until recently, he added, fishing off Iceland had been very slack.

The vessel's tonnage included 1,193 kits of cod (1 'kit' at Grimsby equals 140 lb); 383 kits of haddock and 153 kits of coley.

The merchants at Grimsby were also delighted with the landing.

With distant water fishing from the once-famous deep-sea port now a thing of the past, their survival will depend largely on direct exports from foreign vessels.

This new plant will process cod and other fish from Norway into fish sticks and portions.

**Low shrimp catch**

BAHRAIN shrimp catches are still disappointing, four months into the season.

The summer there has been unusually cool and there has been a low rainfall which could have retarded juvenile shrimp growth, said Colin Lee, deputy director of the Bahrain Fishing Company.

### FAO warning

FAO has warned Pakistan that its coastal waters will be completely depleted of shrimp by 1980. The warning is based on the absence of stock preservation methods in the country.

### Philippines aid

The Norwegian aid organization, NORAD, has recommended development aid for a trawler fleet for the Philippines, and if approved, the project will consist of eight 123 ft long trawlers and four 45 ft inshore boats. Five of the trawlers will be built by yards in Northern Norway.

A desperate shortage of fish at Fleetwood has generated much interest in a link with Faroe.

Richard Conk, president of the Fleetwood Fish Merchants Association, said: "The port urgently needs fish from every possible source, because we do not have enough slips of our own", he said.

## FAROESE SAIL IN WITH A RECORD

THE Faroese were also among the British port record breakers last month.

The 80 ft (24.4 m) stern trawler *Von* broke a class record at Fleetwood on the west coast with 900 kits of cod, coley and haddock, which sold for £34,499. She had been at sea for 14 days.

The *Von* is no stranger to Britain: She was built by the Campbeltown shipyard in Scotland, which has produced several record breaking boats.

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## MORE CASH FOR CEY-NOR

NORAD, the Norwegian aid agency, has recommended an additional 2.2 million kroner for the Cey-Nor fisheries project in Sri Lanka. It was originally intended that the project would be transferred entirely to Sri Lanka by 1979.

The programme includes the construction of a boating, fish processing plants, net factory and a training centre.

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## comment

## Canada act of folly

CANADA'S 200-mile fishing limit has opened up huge new opportunities for her fishing industry. As foreign vessels have either been forced out or obliged to take much reduced catches, local fishermen and processors have moved in.

But the change is more than a simple transfer of effort. To take full advantage of it, the Canadian industry needs the research, the technology and the equipment to exploit once-neglected species, to develop new processing techniques, and to find market outlets.

Some enterprising sections are already doing this. Market promotion is certainly being intensified and work such as that on mid-water trawling of pink shrimp (reported in this issue) should lead to more effective use of stocks.

There is even an attempt to trade-off some Canadian fishing rights for access to foreign markets.

In September, foreign countries working inside the Canadian 200-mile zone were invited to submit proposals for sharing about 100,000 tons of fish surplus to Canadian requirements. But the strong implication was that this would have to be in exchange "for a commitment to buy Canadian fishery products."

### Market obstacles

Explaining the offer (which at least did not offer fish in exchange for outlets for meat or some other commodity), Fisheries Minister Romeo LeBlanc said the Canadian industry was having to overcome a number of impediments to market expansion. He mentioned currency problems and traditional trading relationships.

Hemighi have added that Canadian fish exports do not always come up in the quality standards expected in some of the markets being sought. And that, in an act of unbelievable folly, his federal fishery administration is planning to close down the institutions that are working to solve this problem.

As part of a cut-back in government expenditure, the Technological Laboratories in Halifax and Vancouver are to close at the end of March next year.

These laboratories have a distinguished record in fish research. Their heads, Dr. Graham Bligh in Halifax and Dr. W. E. Ruzzell in Vancouver (together with many of their research staff), have a world-wide reputation which would have convinced importers that Canada does have competent people working to improve fish quality.

Fish product labs around the world work together. In Europe, for example, their heads meet regularly.

With the expansion of the trade in fish, this contact must become increasingly important for countries boasting catches and seeking buyers.

### Ottawa lemmings

One eminent fish researcher in Europe was so astonished at the news of the closures, that he contacted Dr. Bligh for confirmation before he would believe it.

In Canada itself, reactions were instant and highly critical.

"The Ottawa lemmings continue their rush towards self-destruction," wrote editor Henry Frew in the journal *Western Fisheries*. "Instead of taking a cut from the fat, they have chopped away at the lean, productive part of the Fisheries Service."

Minister LeBlanc made a poor choice in his cut-back decision, said the influential Fisheries Council of Canada. It added that the announcement was received in disbelief "not only in Canada but in other countries where Canadian scientists are viewed as world leaders in fisheries science."

The Minister is being urged to reconsider his decision. He is a man with a common sense attitude towards his country's fisheries. But on this occasion he seems to have taken the wrong advice.

It is still not too late to think again, and to do the Canadian industry and fisheries research a service by keeping the laboratories open.

## fishing news international

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# WESMAR news

## Gillnetter boosts efficiency with WESMAR sonar

SINCE Steve Arbaugh installed WESMAR scanning sonar aboard his 32-foot (10m) Sierra, he has greatly increased the efficiency of his gillnetting operations.

"I'm used to setting all the time," Captain Arbaugh said, "but with the sonar, I just set where there are salmon."

Because he is no longer dependent on following other fishing vessels to where salmon have been located, Captain Arbaugh also saves wear and tear on the Sierra's gear.

He said that his WESMAR helps him distinguish salmon from less profitable fish, saving him time in his operations. With his extensive experience with the sonar,

Captain Arbaugh has become familiar with the marks different types of fish make on the CRT screen.

"There are differences in the marks," he said. "I watch to see if there are junk fish. Other fishermen just have to guess where the salmon are, or go back to spots where they hit last year."

The WESMAR allows Captain Arbaugh to fish new areas without the worry of damaging the Sierra's gear. "The sonar has kept me from setting in the wrong spots," he said.

When he first reaches the fishing grounds, Captain Arbaugh sets his WESMAR to search lo-



Captain Steve Arbaugh aboard the SIERRA, equipped with a WESMAR scanning sonar.



Captain William Jaffers, a Gulf Coast shrimper, aboard his SANTA MARIA, equipped with a WESMAR sonar.

## WESMAR is the only way to catch fish

"ONCE you fish with scanning sonar," said Don Dawson, an experienced fisherman who has fished both the Eastern and Western Canadian fisheries. "basically, that's the only way you want to fish."

Dawson, from Vancouver, British Columbia, now fishes the west coast roe herring season aboard his 60ft. (18m) purse seiner B.C. Venture, which he has equipped with a WESMAR scanning sonar.

Pooling with another WESMAR-equipped fishing vessel, the Ocean Cape, Dawson said: "Considering the size of boat we've had, we have always been on the top line."

"There is no problem finding fish or keeping them on the sonar. And, you don't have to be on top of the fish to see them."

This is possible with WESMAR's 360-degree scanning capabilities and long range, making it possible to detect herring schools away from the

vessel and track them continuously while manoeuvring to make the best set.

According to Captain Dawson, his WESMAR is effective in any weather. "WESMAR's sonar works well in rough water because they stabilize the transducer," he said. WESMAR's patented stabilization system eliminates worry over vessel trim, allowing the sonar to continue to operate effectively even when the vessel's pitch and roll may be up to 25 degrees.

Since Dawson arrived in Western Canada in 1972 to participate in roe herring, his success has not been unheralded. When he first began fishing there, he was one of the only vessels equipped with sonar. In his first season using his WESMAR, Captain Dawson netted most of the other vessels. Today, over 70 per cent of the roe fleet in Western Canada successfully uses WESMAR scanning sonar.

A FLORIDA Gulf Coast shrimp recommends WESMAR scanning sonar for net protection.

"With the WESMAR sonar," said William Jeffers, who fishes the tricky waters off Apalachicola, Florida in his 65ft. (20m) Santa Maria, "I am able to pick my way through rock piles without worry of hanging my nets."

During one fishing trip,

Captain Jeffers and Chris Brannon, another WESMAR user, found themselves dragging the same rocky bottom, neither aware the other was using a WESMAR sonar. Brannon warned Jeffers over the radio about the numerous rock piles in the area, saying the only way he was able to find his way through them was because of his WESMAR. Captain Jeffers replied that he

should have no trouble then since he too was equipped with WESMAR sonar.

Other shrimpers in the area, according to Jeffers, watched in amazement as the two vessels successfully picked their way through the rocky grounds.

Besides using his WESMAR for shrimping, Captain Jeffers uses his sonar in his bottom fishing for grouper and red snapper in locate rocks and other underwater obstructions where the fish congregate.

One incident related by Captain Jeffers was when he was shrimping in the Florida Keys, and spotted a worthwhile school of bottom fish. Putting out his lines, Captain Jeffers brought in 7,000lb (3,180 kg) of snapper and grouper in his three-day stay.

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The EEC is offering financial compensation and aid in developing local fishing industries in return for continued access to African fishing grounds.

The rich waters there could become increasingly attractive to fleets from EEC countries following restrictions on Icelandic, Norwegian, Faroese and other grounds.

Nearly 80 per cent of the fish sold to America was in processed packs.

The Commission was given a mandate by the EEC Council of Ministers in July 1977 to negotiate agreements with Senegal, Mauritius, Guinea Bissau and Cape Verde but has made little progress.

## Troller recommends WESMAR sonar for all commercial fishermen

JOHN BRUIJIN, owner and captain of the 44ft. (13m) troller Grace Evelyn, considers his WESMAR scanning sonar a major ingredient in his success.

"I am very satisfied with my sonar," Captain Bruijin said. "It has paid for itself many times over."

Fishing for albacore and salmon along the west coast of the United States, Captain Bruijin remembers one incident when his WESMAR meant the difference between success and failure.

According to Bruijin, one night the troller fleet was heading south from

Newport, Oregon, towards Monterey, California. Suddenly the sonar "lit up like a Christmas tree."

Being an experienced sonar operator and familiar with the area, Captain Bruijin believed the marks showed a school of albacore. Along with another fishing vessel he decided to wait in the area until morning while the remainder of the fleet continued towards Monterey.

When morning arrived, Captain Bruijin found himself in the middle of a large school of albacore. He radioed so the rest of the fleet would be notified. They too soon returned to aid in the catch.

Captain John Bruijn's successful troller GRACE EVELYN, equipped with WESMAR scanning sonar.

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Captain John Bruijn's successful troller GRACE EVELYN, equipped with WESMAR scanning sonar.

THE BRUTAL murder last month of six fishermen off Mauritania is a reminder that crews these days face dangers not only from the sea and from the equipment they use.

Mauritania is a poor, sparsely populated desert country riven by political conflict.

A guerrilla movement known as the Polisario has periodically involved innocent fishermen from other countries in its fight against the government.

It had until last month concentrated on fishermen from Spain. But, among the fishing fleets working off Mauritania under licence is that serving the fish meal factory ship *I'Interpeche*.

This is es polyglot collection of nationalities as you could imagine. There are Chileans, Dutch, Spanish, South Africans and many others.

The factory ship was built in Britain for a Norwegian whaling company. She was converted in South Africa, is registered in Bermuda and owned by a company which operates her from Santa Cruz de Tenerife in the Canary Islands.

One of the purse seiners supplying her with sardines and other species is the 300-ton *Zuidester 8* owned by a Dutch company and registered in Curacao. Her crew of nine was recruited in Walvis Bay in Namibia.

In the early hours of the morning of Wednesday, October 4, the ship was at anchor off the Mauritanian coast, north of the port of Nouadibou, when she was boarded by a group of armed men later claimed by the Polisario as being members of their organisation.

They kept asking their nationality, apparently refusing to believe the fishermen were not Spanish. Then they shot them, but in the confusion three of the crew escaped by hiding.

Those killed were shot through the head then battered by clubs and gun butts. The dead included the skipper and the mate.

A few hours later, another ship in the fleet, the *Zuidester 3*, came upon the stricken purse seiner and brought her, the survivors and the bodies to Nouadibou.

### Keeping watch

The fleet continues to work off Mauritania but skippers and crews are having to watch out for more than signs of fish. And they are making sure of

boats are kept moving at night well out of range of prowling political thugs.

A more peaceful coast also worked under licence by *I'Interpeche* and her catchers is that of the Republic of Guinea-Bissau, further south.

This former Portuguese colony is one of the very poor countries of Africa with fishing waters among its few natural assets. But, in contrast to most developing countries in the region, Guinea-Bissau is seeking to diversify into rather than out of beach-based canoe fisheries.

I was told this last month when I met her Secretary of State for Fisheries, Joseph Turpin, who had visited Sweden and was completing a tour of British fishing ports, arranged for him by the Foreign and Commonwealth Office.

Rather like Angola, where the Portuguese had developed harbour-based medium-size boat fisheries, Guinea-Bissau has experience of working powered, decked boats well out to sea.

What she needs now said Mr. Turpin are village-based fisheries and small-scale fishermen.

Helping towards this, the Swedish International Development Agency (SIDA) is having ferro-cement pirogues built by a firm in Britain. The craft will be powered by Volvo Penta engines.

Shortly before I met him, he had been talking to the British Ministry of Overseas Development. He invited the Ministry to send a mission to Guinea-Bissau and he hoped this would lead to British participation in his country's important fishing industry.

Soon after being put in charge of

Guinea-Bissau's fisheries early in 1977, Mr. Turpin got a useful introduction to modern technology in the industry when he went to Dakar to see the international fishing exhibition there.

This African Fisheries Exhibition was the British firm Industrial and Trade Fairs' first foray into the industry following its purchase of the World Fishing Exhibition, which it staged later in 1977 in Halifax, Nova Scotia.

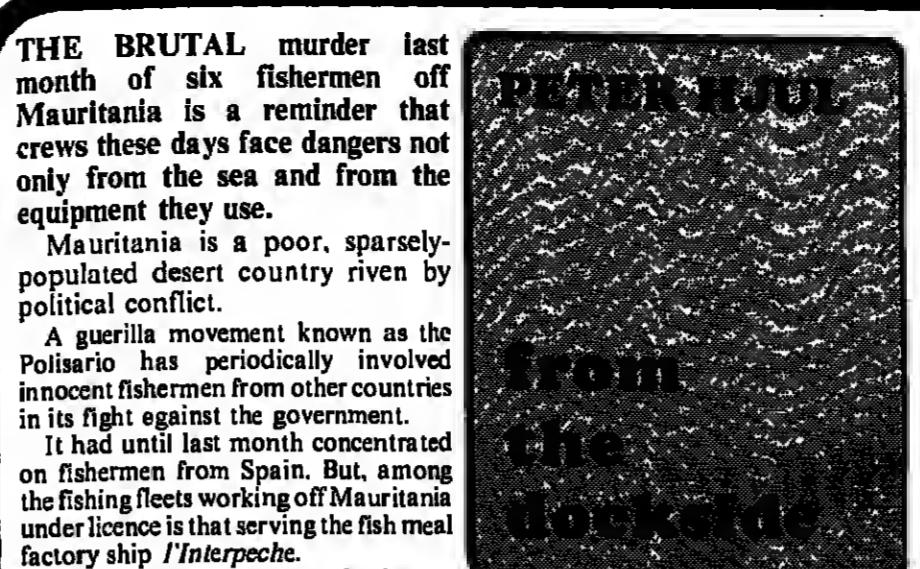
### First foray

And this brings me back to the subject of exhibitions. In the column in August, I commented on the confusion among suppliers to the industry caused by a build-up of planned exhibitions and impending clashes in dates. I urged the organisers to get together and try and sort themselves out.

Two have done so, through some linking companies. The French group GERP-SEPIIC is going ahead with the exhibition in Nantes in June 1979, but says that its focus will be on the French, southern European and African regions; ITF's World Fishing exhibition, scheduled for Copenhagen in June 1980, will concentrate on northern regions.

I have also had a letter from John Legate, exhibition director of ITF, who says that my comments in August were not really fair to his organisation.

As we have no close involvement, direct or indirect, in any exhibition company, we try hard to be impartial and so I am glad to offer him the chance to say why he believes Copenhagen in 1980 is the right place and time for the next World Fishing exhibition.



## NORDIC'S EXPORTS MAKE £40m

## EEC MISSION SETS OUT TO COURT SENEGALESE

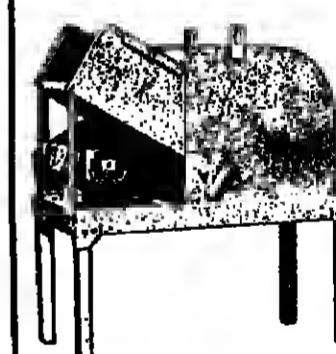
FISHERIES experts from the European Commission left Brussels last month for Dakar to try and speed up preparations for a framework agreement with Senegal.

The rich waters there could become increasingly attractive to fleets from EEC countries following restrictions on Icelandic, Norwegian, Faroese and other grounds.

The Commission was given a mandate by the EEC Council of Ministers in July 1977 to negotiate agreements with Senegal, Mauritius, Guinea Bissau and Cape Verde but has made little progress.

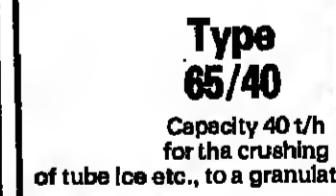
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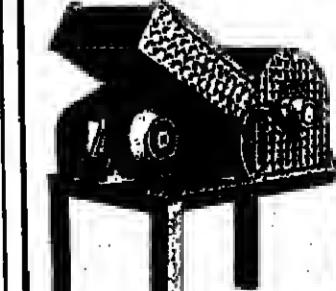
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# Fish firms flock to Monte Carlo

FOUR HUNDRED delegates from 30 nations, representing 183 companies, have registered to attend the first International Seafood Conference in Monte Carlo this month.

Reading like an international Who's Who of fish processing and marketing firms, the lists of participants takes in contingents from the United States, Canada, South and Central America, Scandinavia, Western Europe, Australia and Japan.

According to the sponsors, the massive response reflects the very great need for an international forum for seafood companies.

Sea for November 12 to 15, the two and a half day conference will cover supply prospects, future demand, marketing and the outlook for prices both in the developed and developing nations.

There will be a special presentation on an in-

**First world seafood conference looks a winner...**

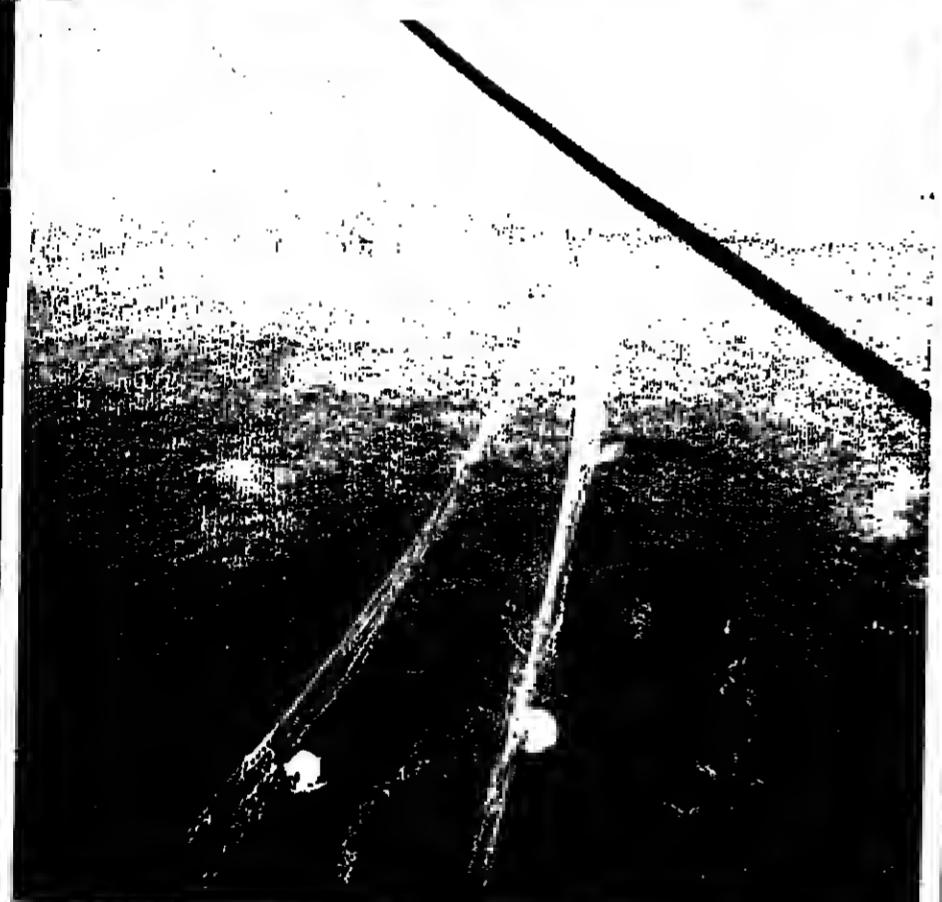
ternationally sponsored sea food promotion campaign and discussions on international co-operation in the seafood business.

Following the conference, a tour has been planned for participants wishing to attend SIAL (International Food Products Exhibitions).

Transport, accommodation and admission to the SIAL exhibitions are included in the special travel package.

A reception has been arranged for November 16 where the Mayor of Paris will greet SIAL guests from the Conference.

## engelnets worldwide



Pelagic ENGEL-NET on a 3000hp factory trawler off the American coast.

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## Four keynote speakers



A. H. Coburn  
Managing Director,  
Findus Ltd, UK.  
How a multiple company views future growth and profits in seafoods.



Dr. Geoffrey Burgess  
Director, Tony Research Station, Aberdeen, Scotland.  
Emerging technology in the fishing industry.



W. P. Appleyard  
Chief, Fishery Industries Development Service, Fishery Industries Division, FAO, Rome.  
Overview of fisheries development plans of emerging nations.



Dr. John Liston  
Director, Institute for Food Science and Technology, College of Fisheries, University of Washington, USA.  
Worldwide health considerations for the seafood industry.

## Norway fishermen lose fight for oil compensation

AFTER three years of argument, the Norwegian government has announced that it will not be compensating trawling companies for the closure of fishing grounds by the offshore oil industry.

The government contends that cleaning up the seabed eliminates the basis for claims. Trawlers do not agree.

But after three years of consideration and repeated demands by fishermen, the matter now seems settled for the North Sea at least.

All the Norwegian fishermen's organisations have said that they want to know exactly where they stand when oil exploration work moves northwards in 1980.

Fishing is good in the greater Ekofisk oil-producing area in the North Sea, according to the Norwegian Fisheries Directorate.

As in the Gulf of Mexico, the offshore installations attract fish by their light and they help the growth of feed organisms,

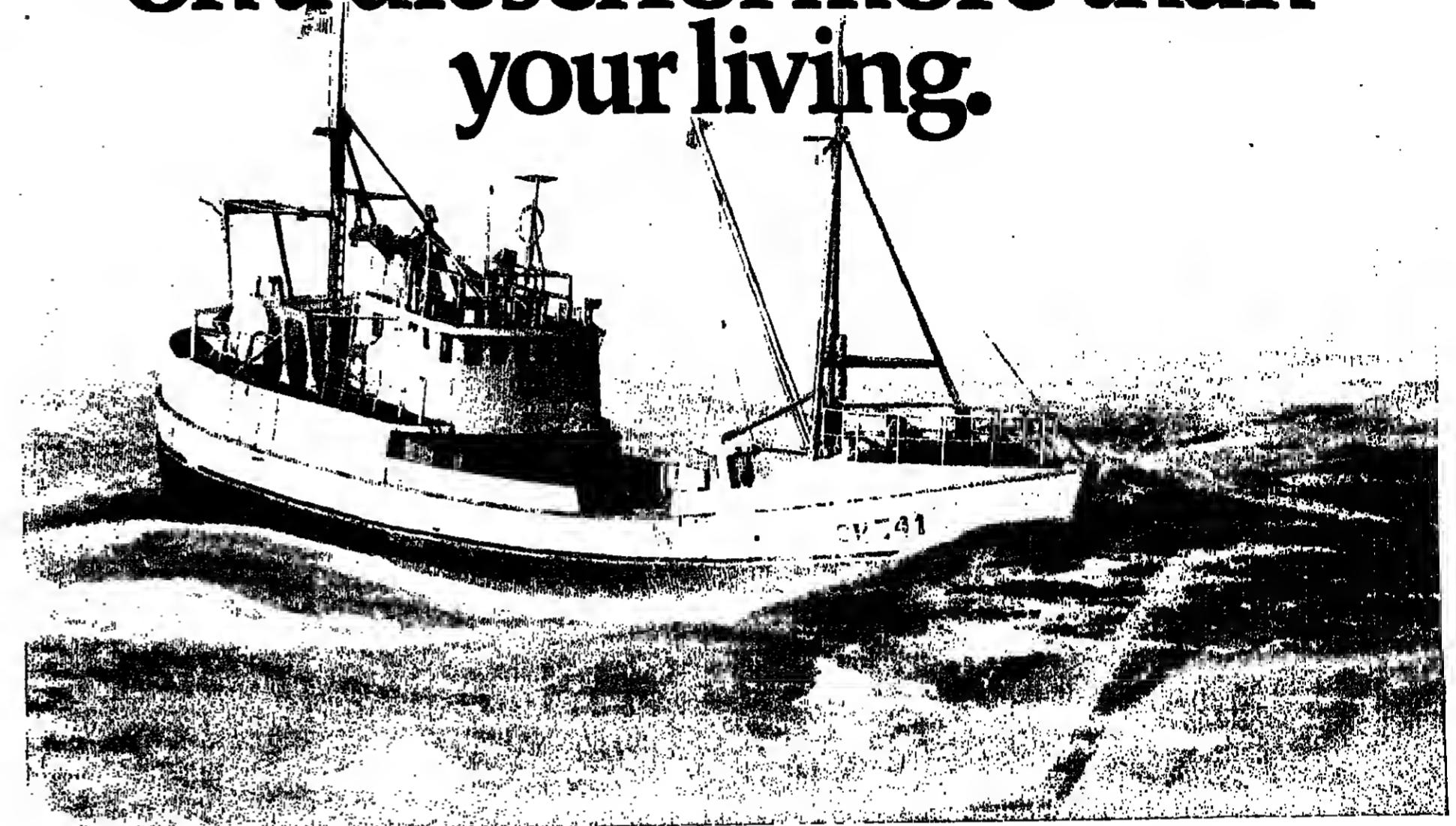
## India ports wrangle

FISHING ports now being built along the Indian coast are to come under the Ministry of Agriculture if they are separate from the general cargo ports nearby.

All other harbours will be placed under the port trust concerned.

The Ministry had asked for all fishing ports, but this was opposed by the Shipping Ministry, which said this would create administrative problems. Many harbours, for example, have common 100 gallon channels.

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Cummins Diesel

Sales Corporation

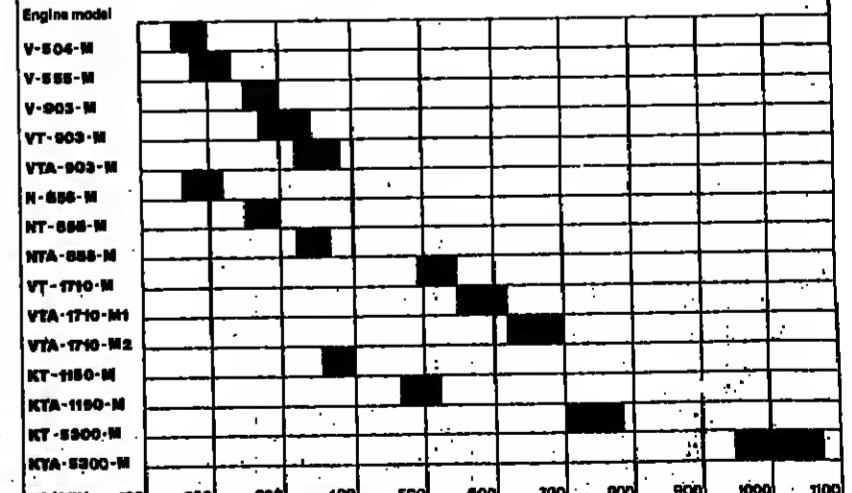
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## DUTCH AID FOR SRI LANKA

DISCUSSIONS between Sri Lanka and the Netherlands are expected to result in a Dutch aid project for the development of the fishing industry along 200 km of the east coast of Sri Lanka, from Trincomalee to Penama.

FNI correspondent Nalin Wijesekera reports that the Dutch government has allocated the equivalent of Rs5 million (about £170,000) for boats, nets and other types of gear, and for training.

## BOSSES MEET THE UNIONS

US TUNA boat owners and unions came face to face recently aboard the purse seiner *Maria C.J.*

But the bosses, in the form of Manuel Silva, president of the American Tunabot Owners Association, and the unions, represented by Jack Tarrantino, president of the Fishermen's

### But it's all friends together for tuna seining demonstration

Union of America (Pacific and Caribbean Area), were on the best of terms. They said there were no problems between fishermen and owners.

Tuna fisherman in the United States have no fixed hourly or weekly rates of pay or contracts calling for regular pay increases. But as long as the price of fish keeps rising, their pay rises with it. Each crewman hires bargains with the skipper for his share.

New men are usually taken on at less than a full share of the catch, but in general will achieve maximum pay in four or five trips — a little over a year

in the normal course of things. The unions become involved only in the event of a dispute, so there was little for Manuel Silva and Jack Tarrantino to argue about when they set sail aboard the *Maria C.J.*

The purpose of the trip was to demonstrate modern tuna seining technology to leading administrators from the National Oceanic and Atmospheric Administration and National Marine Fisheries Service.

They were also shown procedures for saving porpoises that often became entangled in the net.

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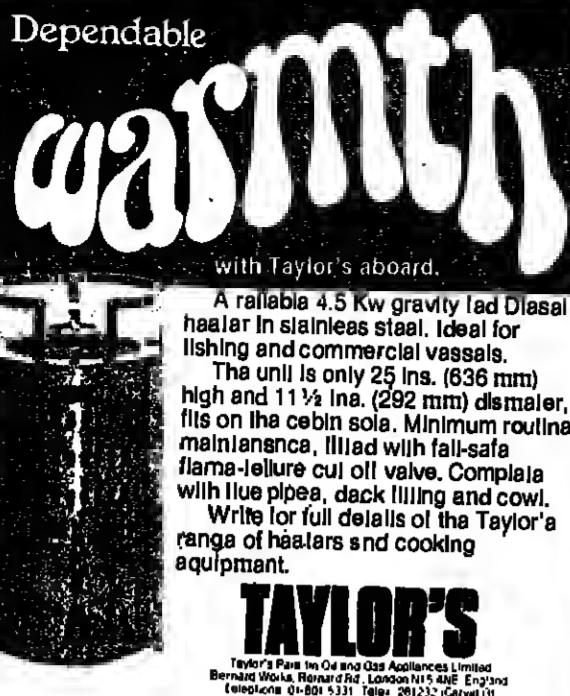
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New opportunities for investment southern fishery

## German supership sets off to probe the deep

THE New Zealand government has approved a joint venture involving two local companies and one of the leading fishing firms in West Germany.

R. C. Macdonald Ltd. and Southland Frozen Meat Company Ltd. have been negotiating over some 18 months with Hanscatische Hochseefischerei of Bremerhaven.

They have now agreed on a one-year exploratory and experimental fishing phase using the modern West German factory stern trawler *Wesermunde* - a ship of 3,244 gross tons and 95 metres long.

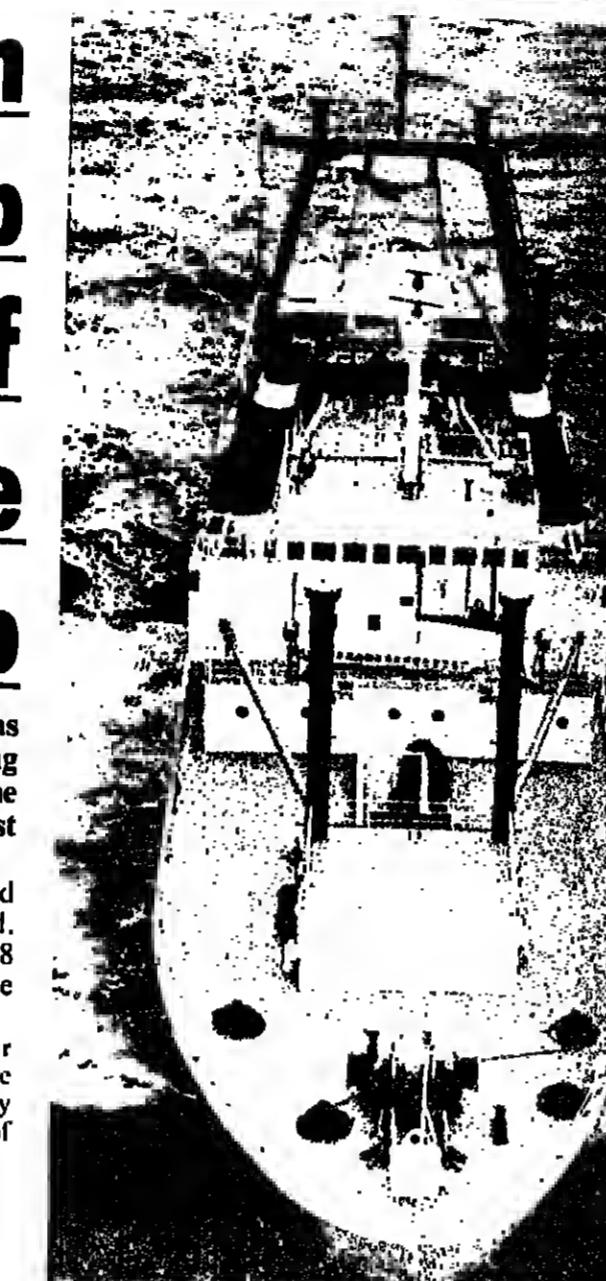
One of the new-generation German factory trawlers built in the early 1970s, the *Wesermunde* will fish around the Campbell Plateau in the extreme south of New Zealand, the Challenge Plateau on the western entrance to Cook Strait and the Chatham Rise on the east coast of South Island.

She will be able to trawl down to 1,200 metres and should take species not usually caught by New Zealand's inshore fishing fleet.

Most of the commercial fishing in

deep and distant waters round New Zealand has been by the Russians, although Japanese ships have carried out research trips on a limited scale.

It is expected that about half the



THE *WESERMUNDE*: SHE CAN FISH AT GREAT DEPTHS AND IN MOST WEATHERS

*Wesermunde's* time will be taken up by research under German and New Zealand scientists. The work will extend from resource studies to the fish itself and for machine processing and marketing.

Main species expected to come up in the nets of the *Wesermunde* should include the New Zealand hoki (*Micromesistius novaezealandiae*), southern blue whiting (*Macruronus australis*) and squid.

Her base port will be Bluff on the southern tip of the east coast of South Island, some 250 miles from the Campbell and Auckland Islands.

Representatives of the German company were in New Zealand last month finalising arrangements for a venture hailed as a major forward step towards commercial fishing into deep waters from home bases.

TEN joint ventures with foreign companies were approved early last month by New Zealand's Minister of Fisheries, Mr. J. B. Bolger.

All of them have a significant interest in squid.

Other joint ventures are up for government consideration, but the ten were given priority because of the closeness of the aquid season which begins in November or early December.

Fifty-one squid vessels are included in the approvals. Of these, 37 are from Japan and the rest from South Korea.

They are expected to take nearly 17,000 tons by jigging.

Four trawlers are also included in the ventures and they should catch 4,250 tons plus about 10,000 tons of less preferred fin fish species.

Mr. Bolger said that

the total gross value of the allocated fish at point of sale was estimated at about \$34 million.

Net export return to

the joint venture companies would be about \$12 million. But he emphasized that export returns did not mean profits.

Several of the New Zealand companies are new to fishing. They have taken this opportunity to diversify.

Fishing companies who have linked up with the foreign operators see this as a chance to learn as much as they can about squid catching, preservation and marketing.

During the 1977/78 season, about 93,700 tons of squid were landed and only 500 tons of this by New Zealand vessels.

Countries allowed squid and other fish quotas will have to pay licence fees based on the amount caught. If she catches her full allocation, Japan will have to pay \$5.5 million; Russia \$2.9 million and South Korea \$1 million.

## Meanwhile, in Chile...

## JAPANESE INVEST IN NEW FISH PLANT OPERATION

THE Chilean government has agreed to a joint fishing and processing venture between local interests and Nippon Suisan Kaisha of Japan.

The new company is to build a processing plant and cold store in Puerto Montt

next year. The joint venture is 70 per cent owned by Nippon Suisan, 10 per cent by Mitsui & Co. and 20 per cent by the Chilean firms.

Fish processed will be exported to the U.S. and Japan.

## EEC seeks deals with Angola

A TEAM from the European Economic Community will visit Angola this month to discuss fisheries co-operation.

This follows the Belgian Foreign Minister's recent visit to Luanda and President Neto's new and more open policy towards the EEC.

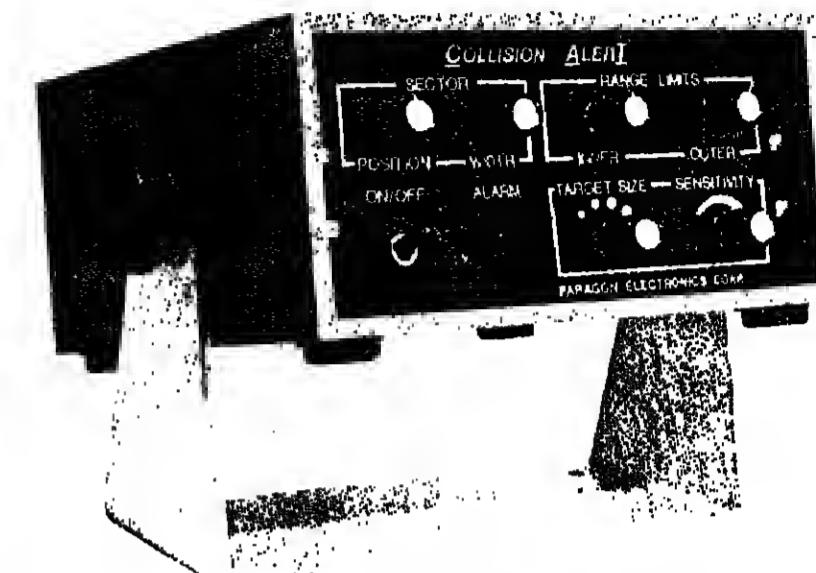
The Angolans are anxious not to let their waters, which have been closed to foreign fishermen for some time, be entirely exploited by the Russians.

Denmark, France, Italy and West Germany are all interested in fishing there.

EEC mission to Senegal: turn to page 7.

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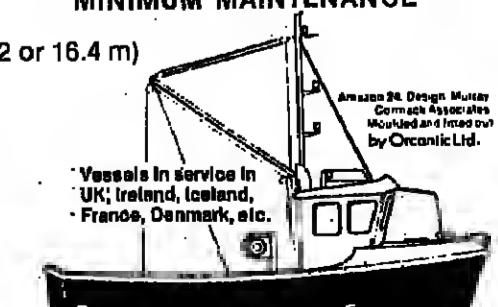
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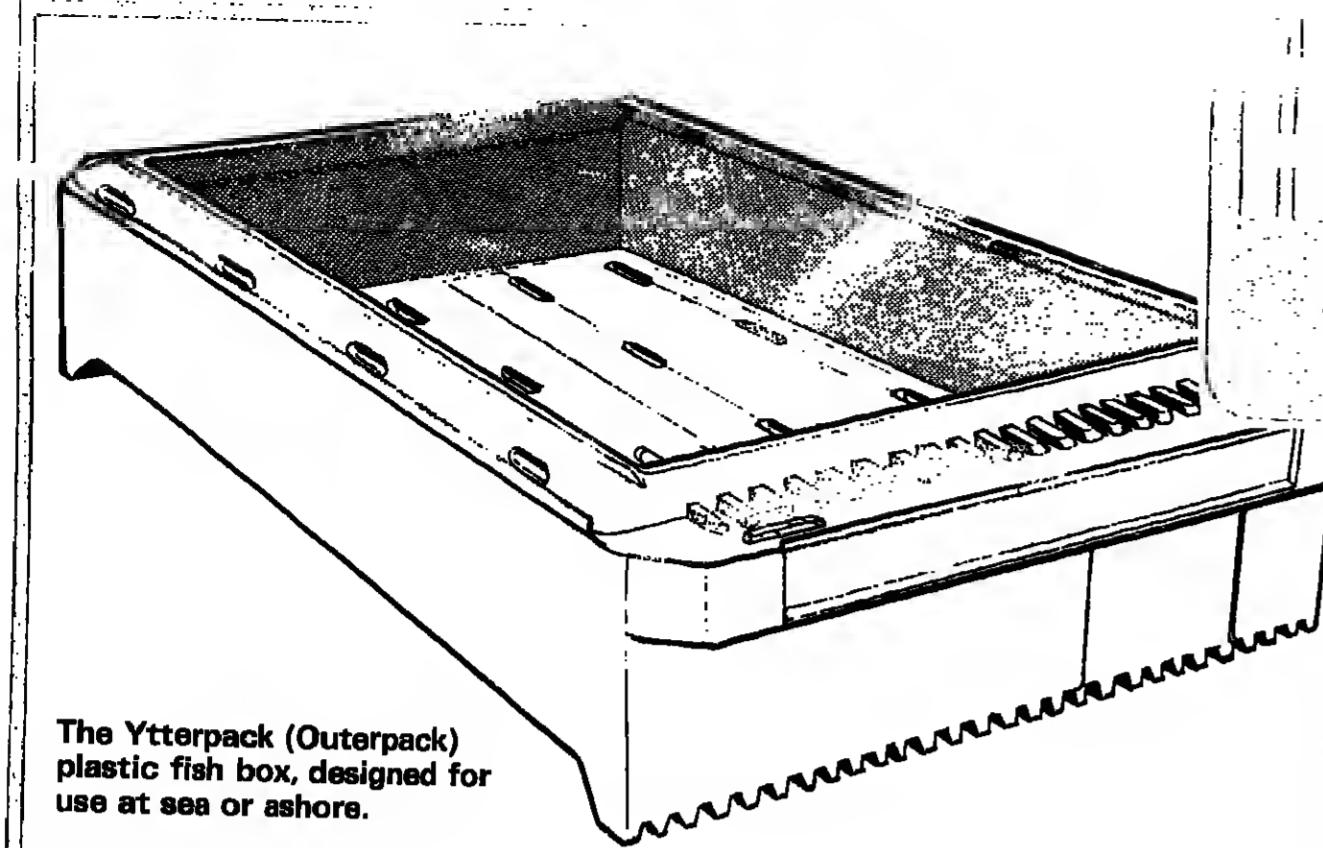
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The Ytterpack (Outerpack) plastic fish box, designed for use at sea or ashore.

# HANDLING AROUND SYSTEM BUILT PLASTIC BOX

Report from  
NINE FISHERIES and  
WATER USES

**THE FISKLADAN** company of Gothenburg, Sweden, has developed a handling and transport system for fresh fish around its Ytterpack plastic box. This FOL (Fish on Line) system will be incorporated on a prototype mobile service terminal for Swedish Baltic Sea trawlers.

Already widely used in Sweden, Denmark and now Norway, the Ytterpack is a shipboard container suitable for shore handling. It is designed to replace the traditional wood box over which it is claimed to have the following advantages:

- Economy, with long life offsetting higher initial cost.
- Strength and durability. The material is impervious to damp and temperature extremes.
- Versatile stacking, special grooves allow off-centre stacking to follow hull shape in the vessel hold.
- Ease and safety in handling - stocks lock on long and short sides, and the rounded handles are specially designed.
- Hygiene - smooth white surfaces, the bottom clear of the ground, and the short legs keep boxes apart.
- Better cooling and drainage - numerous holes allow icewater to permeate through the stock.
- Palletless handling.

Fiskladan intends the FOL system to keep handling of fish to an absolute minimum, thus helping to maintain quality and value.

#### Equipment

A range of ancillary equipment has been designed around the Ytterpack container, including pneumatic lifting for on-hoard use and an elevator for moving full or empty boxes.

An Innerpack disposable two-part liner is available to give additional hygiene.

Much thought has been applied to the need to preserve freshness, and thus quality, right to the point of sale, and an aluminium foil "space blanket" insulating cover has been introduced for box stacks. This Spacepack is claimed to keep the fish temperature constant from grounds to consumer.

To permit joint transport in unit loads, a water-tight Aquapack pallet is available. This prevents leakage so that a box stuck in a lorry with other goods, without being had neighbour.

Reusable boxes need regular and efficient washing, and Fiskladan has devised a compact machine tailored to the containers. The Tvattpack machine is made in corrosion-

proof materials, washing up to 12 boxes a minute on a water usage of 30 litres/min. The machine has a 515 litre tank. Efficient washing is aided by a novel feature of the Ytterpack container - the sides are completely flat and free from moulded projections.

The inventory of specially-designed ancillary equipment is completed by Combiack, a 12-kilo non-returnable box for trailers. Frysack, a special carton for depreening and Lyfpack the collective name for a range of loading hooks, truck forks and lifting devices for palletless handling.

Fiskladan's thinking extends some way beyond the supply of integrated hardware. In its ultimate form, Fish On Line would use modern computer technology to register details of a catch, direct the vessel to the most suitable port for current market demand and co-ordinate shore transport.

#### Keep track

The system would keep track of circulating boxes and direct them back to vessels as needed, and Fiskladan is now working on the design of an automatic box-filling machine, to dispense accurate 30 kilo loads of fish. The scales would be linked to a micro-computer to keep an accurate tally, as Fiskladan feels that inaccurate weighing can cost a lot of money in the long term.

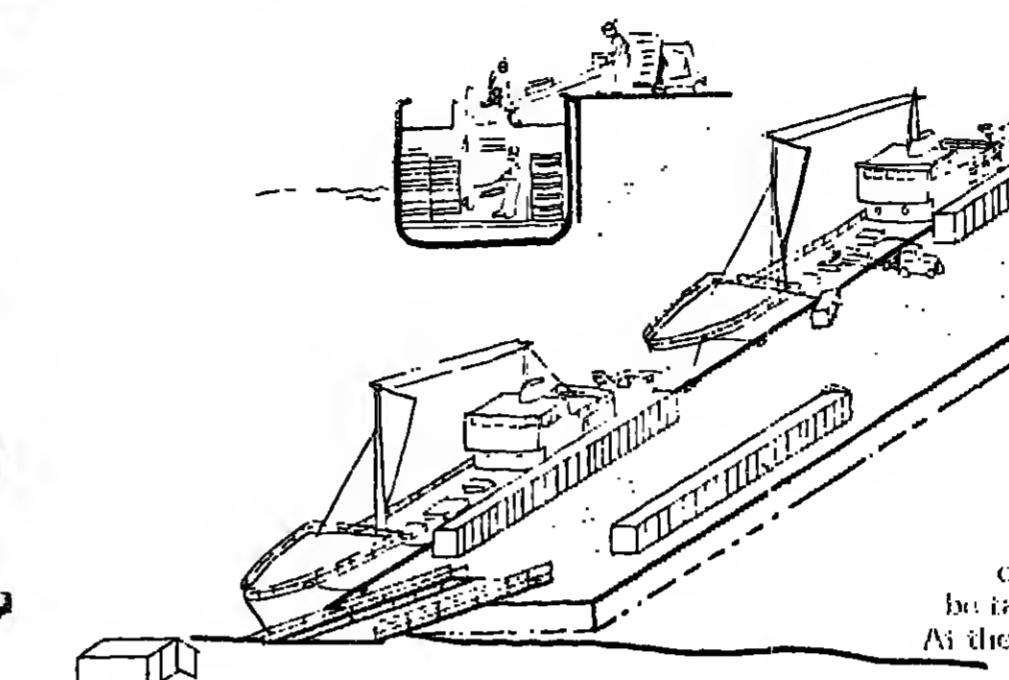
This may all seem a bit fanciful, but already much detailed work has been done on the FOL system, and the hardware is ready.

Fiskladan has worked with fishing companies and the Chalmers University of Technology, Gothenburg, which has completed coatings and prepared computer paperwork for the entire transport chain.

#### Economical

It is claimed that this system shows the FOL system to be more economical on handling and transport costs than many current operations; and, as the unit cost of fish continues to rise, preserving quality and hygiene standards (a key aspect of the system) will gain in importance.

The first FOL system is likely to be established in Sweden, but the originators believe that it has great possibilities in many areas, reviving or establishing the application of a really efficient distribution system for high-quality fresh fish. The system is now patent-pending in Europe, the USA, Canada and Japan.



**Swedish Mobile Service**  
Terminal 114 metres long by 23 metres wide and with a food fish handling capacity of 300 tons a day. The insert drawing shows the Ytterpack plastic containers being lifted by elevator from the hold to a portable conveyor for transport by fork truck.

The Terminal is anchored end-on to the shore with access over the ramp (lower left). Containers are shown on the Terminal empty for putting aboard or full and ready to be taken away. In the centre, a truck and trailer are being loaded. At the top right, a trawler takes on ice.

in working it, further terminals will be developed.

It is designed to serve six 30.5 metre (100 ft) boats landing at the same time. Using an elevator in the hold, the landing rate would be about 6,000 boxes a day. While others are landing, one trawler can be taking on ice. Other equipment on the terminal will supply water and fuel, dockside electrical power, and storage space for industrial fish.

The prototype is being built like a vessel in two units of 57 metres long by 23 metres wide. Other units can be added to contain factories or stores.

**SHIPYARDS** these days are constantly on the lookout for alternative uses of their building capacity. One new idea which is arousing interest in Sweden is that of a Mobile Service Terminal for fishing fleets testing a new catching area or (as in the southwest of England at present) operating intensively for a short period from a temporary base.

The core of the idea came from the technical management of the firm Fiskladan Packing AB of Gothenburg. The development has been carried out by Svenska Varv (a government development service for shipyards) and the builder

Gotaverken in Gothenburg.

In addition to giving considerable flexibility to fleet, the Terminal is intended to speed-up handling and help maintain quality of the product. Therefore, as will be seen from the description of the Fiskladan Ytterpack boxes and Fish On Line system, this company has been able to make a significant contribution in

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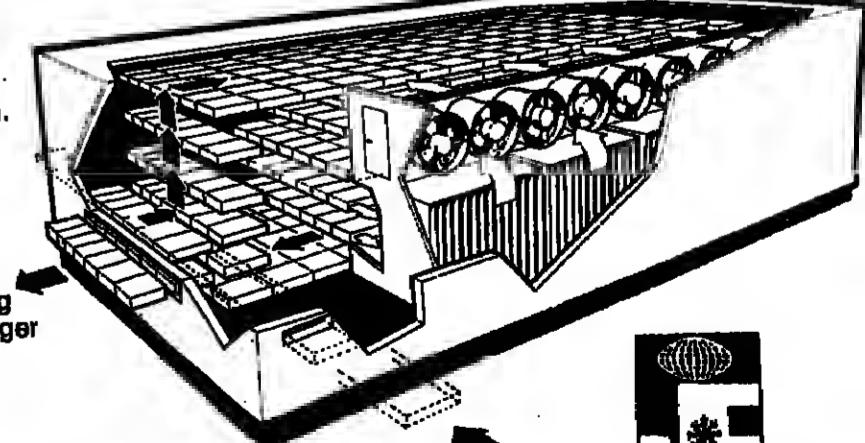
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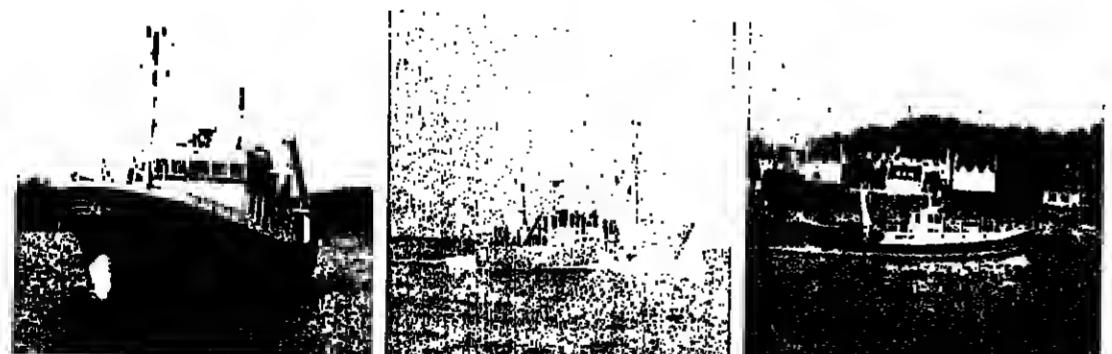
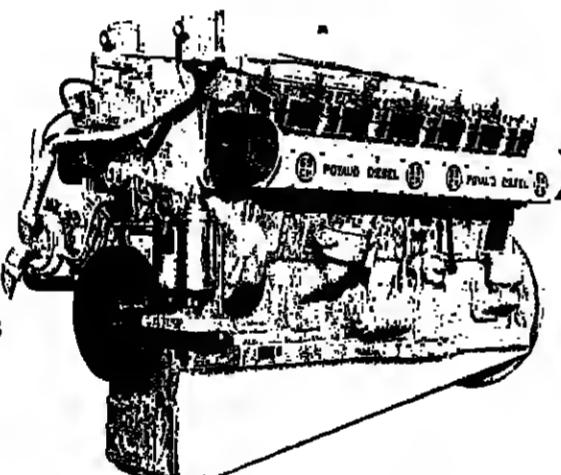
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1. Trawler - POYAUD main engine type A 1215D SiM - 600 hp
2. 3. 4. Trawlers with POYAUD main engines type A 12150 M - 440 hp each
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Nor-Fishing '78



# NORFISHING GOES TO OSLO

FOR ITS seventh showing since it was first presented in Bergen in 1961, followed by Trondheim in 1965, 1969, 1972, 1974 and 1976, Norway's International Fisheries Fair comes to Oslo and to the big Sjolyst exhibition centre.

Nor-Fishing '78 will be open from November 20 to 26. In addition to the stands of more than 150 participating companies, attractions of the exhibition will include a national seminar on possibilities for expanding the blue whiting fishery, and an international seminar on post-harvest technology and investment in developing countries.

DESPITE its change of venue and the time for its showing, Nor-Fishing promises once again this year to be a major international occasion for the fishing industry.

The exhibition will be attended by representatives of some 30 developing countries. There will be two important seminars, and support from more than 150 exhibitors showing the products of hundreds of manufacturers.

The change of venue resulted from differences of opinion with the Fisheries Directorate and other organi-

sations over the frequency of the show.

Aware of the international status which the exhibition had gained during its two-yearly showings in Trondheim, Gunnar Skuggedal, who heads Norges Varemesse (the organising company), opposed suggestions that it should be staged at three or four-yearly intervals.

Trondheim also presented problems. The Nidaros halls just could not accommodate all the stand space.

From 1972, the exhibition

overflowed into temporary structures which, by 1976, housed nearly half the exhibits.

Without permanent structures, or substantial financial help from the city of Trondheim, the exhibition could not grow and was certain to experience increasing difficulties covering its costs.

Discussions about the future soon revealed two sharply different views on the role of Nor-Fishing.

It had been created in the 1960s as a "fishing fair" with events such as "fishermen's day" and the sail past of boats in Trondheim fjord as prominent features.

While these were kept as the exhibition grew, some people

felt that its rising international status had so changed its character that it had lost touch with the fishermen and their organisations.

There was also a feeling among some regular exhibitors that two-yearly shows were too frequent.

But Norges Varemesse officials argue that many of the smaller Norwegian firms taking part did not agree. The exhibition has been their big chance of showing people from all over the world what they are doing and what they can supply.

Mr. Skuggedal and his colleagues contend that Nor-

Fishing has become "international" through its own efforts and achievements and that it should not risk this hard-earned status by moving out of its two-year "slot."

As FNI has pointed out, there is an unfortunate proliferation of fishing exhibitions.

For some of Nor-Fishing's regular supporters, the change has been too much. But the organisers did get the agreement of the Fisheries Directorate, to stay in 1978

One immediate benefit is access to excellent conference rooms in the centre. Early efforts have been made to prepare seminars in association with the exhibition.

There will be two, widely different in character.

The first is being run in co-operation with the Export Council of Norway, the Norwegian Agency for International Development (NORAD), and FAO.

Its subject is post-harvest technology and investment in developing fisheries.

FAO played a considerable part in preparing the programme and the Export Council has arranged for people from developing countries to come to Oslo to take part.

Another top firm in processing machinery, Areco of Sweden, will be back again.

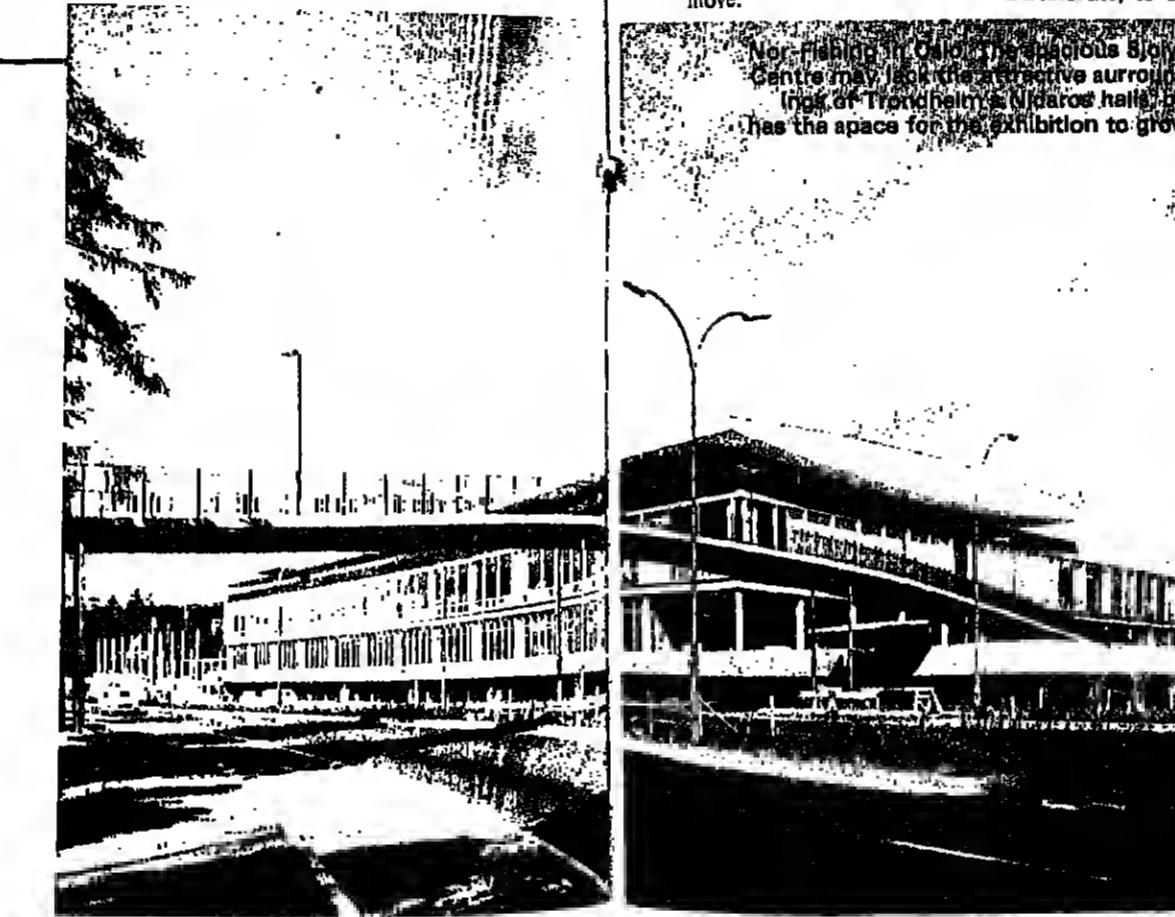
British participants include the GRP boatbuilder Orca (formerly Halmaric) and the Pelters Company.

From Poland, Centromor will be showing models of the series-built fishing vessels available from its yards.



Norges Varemesse's Gunnar Skuggedal — fight to keep up two-year exhibition.

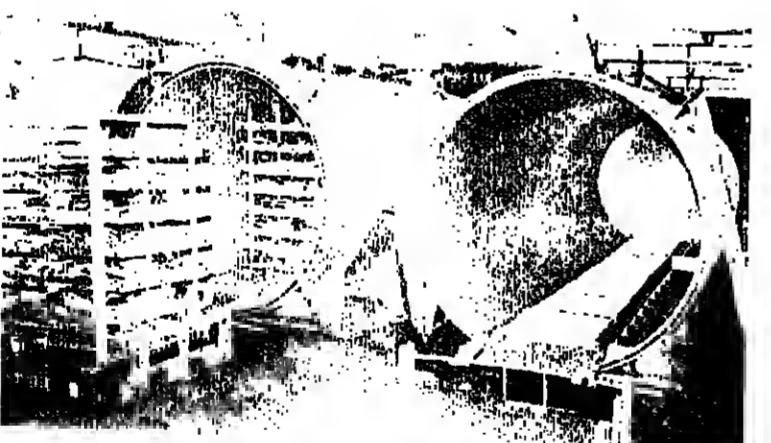
## With two seminars this year



NOR-FISHING IN OSLO: The Sjolyst Centre may look like the attractive surroundings of Trondheim's Nidaros halls, but it has the space for the exhibition to grow.

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## ON THE AGENDA

● THE FIRST of the two seminars being held in conjunction with Nor-Fishing will be in the Conference Room of the Sjolyst Center. Its theme is Post-harvest Technology and Investment in Developing Countries. In organising it, Norges Varemesse has the support of the Export Council, FAO and NORAD.

This seminar will be preceded by a film presentation "Targets for fisheries development," an inaugural dinner and a Norwegian evening in the Najaden restaurant on Bygdyen on Monday, November 20.

It will take place over the two following days, opening at 9 a.m. on Tuesday, November 21.

The seminar idea aroused the interest of Hermann Watzinger, then head of the Fisheries Department of FAO; and the seminar leader and overall chairman is W. Phillip Appleby, chief of FAO's Fishery Industries Development Service.

The first session will concentrate on post-harvest technology and discussion leaders will include Dr. Wolfgang Krone of FAO, J. Maud Kordylas of the Food Research Institute in Ghent, Gerdt Lovold of FIDEFO and Ahmed Kemen of Malaysia.

Speakers will talk about uses of underexploited resources through more efficient handling and preservation, new products and processing methods and improved market identification and promotion.

Investment needs will be the subject of the afternoon session. Speakers will include Duckoo Lee of the World Bank, T. Oforiokuma of Nigeria, Aida Elid of FAO.

On the following day, the seminar will consider the funding of investment. Discussion leader will be Per Gustavsen of the Regional Banks of Norway. Speakers will include Julio Lune of the Inter American Bank, and Ahmed H. Redwan of the United Arab Emirates.

Norges Varemesse and the Export Council are arranging to bring representatives from some 30 developing countries to Nor-Fishing. These visitors will be given every opportunity.

● A SEMINAR of more immediate interest to fishermen in Scandinavia and other European countries will be chaired by Arnulf Midtgard, director of the State Fishery Bank in Norway. It will consider the expansion possibilities in blue whiting fishing and will take place on Friday, November 24.

This is being billed as a national seminar. It will be in Norwegian but will be translated into English.

The first session will look at the resource, its area of distribution and size of catchable stocks.

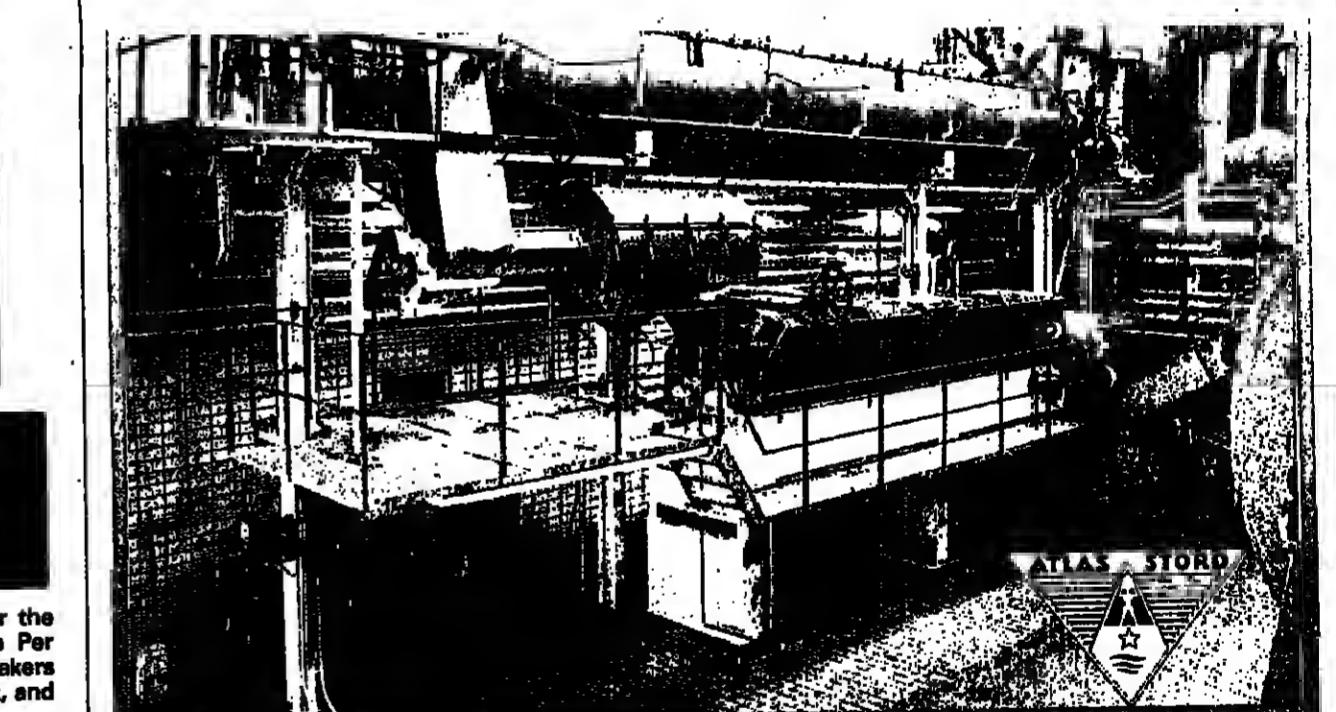
Then Steiner Olsen of the Institute of Fishery Technology Research will deal with gear and catching techniques.

Slimrad played a prominent part in the fishery, particularly with its new device for measuring the amount of fish in the cod-end. Following Mr. Olsen, Arnulf Borud will discuss fish finding equipment for blue whiting.

After a session on products and markets, the seminar will close with a panel debate on catching techniques and equipment requirements.

## A NEW GENERATION OF FISHMEAL PLANTS FROM

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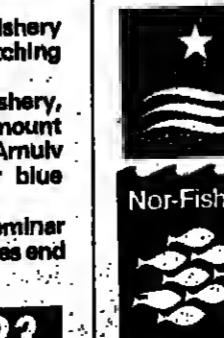


Section of the FPC-plant at Halsa, North-Norway.

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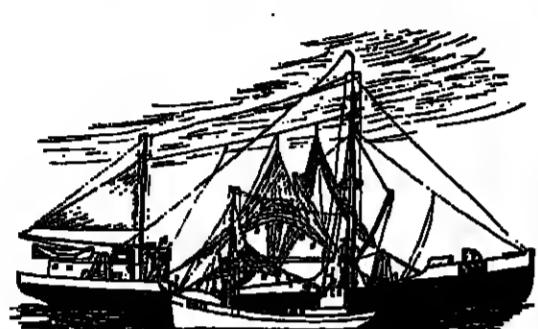
pages 20, 21, 22, 23

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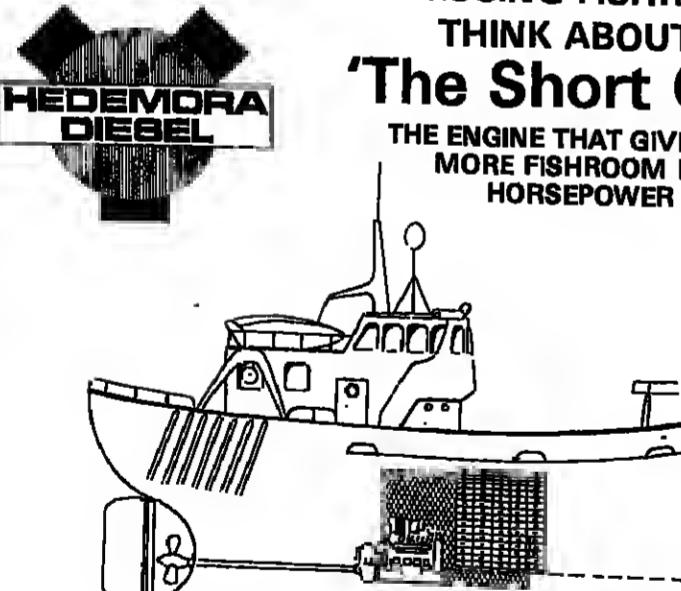


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# Autoliner is scaled down

THE DEVELOPMENT of the automatic line fishing system in Norway has gone on for almost as long as Nor-Fishing itself.

It appeared first in the 1960s as a baiting machine, then as a system. Later the 3-F project showed vessels that could be built around the system, and in 1976 the makers, O. Mustad & Son, were able to demonstrate a ship with the equipment installed.

Autolining is now breaking through into the smaller class of vessel and designers Fiskerstrand and Eidoy of Aalesund have developed a 59 ft. (18 metre) longliner tailored to the system.

A model of this boat will be on show at the Musiad stand in Oslo. She will be built for about 3.5 million kroner (£320,000) with Autoline.

The new vessel will have accommodation for a crew of seven and hold capacity of 55 cu.m.

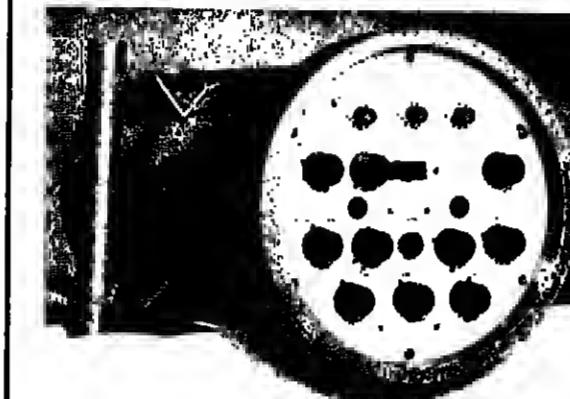
### Manoeuvrable

She will be highly manoeuvrable with Becker-rudder and small side-thruster. Two 200 hp high-speed engines will turn a single screw through one gearbox.

According to Mustad & Son, 55 vessels will be fishing with Autoline by the end of the year.

The system had its first success catching dogfish. Fifteen vessels in the fishery

## New lightweight 'jigger'



FISKERIAUTOMATIKK of Sortland will be introducing its new lightweight automatic jiggering machine.

The firm's standard machine is widely used and some 4,500 have been sold. The latest version is equipped with electromagnetic brake.

In addition to automatic fishing at present depths and automatic hauling, the new machine can fish along the bottom at changing depths.

are now using the system. They are around 100 ft. long, have a crew of nine to 11 men and haul an average of 21,000 hooks per 24 hours. A good catch for a 12-day trip is about 100 tons.

Cusk and ling are caught in another growing Autoline fishery. Twelve boats are taking part, among them the

Scottish *Anni Elisabeth* and the *Oyliner*, first purpose-built Autoliner.

Other fish now being caught include, silver hake and cod off the east coast of Canada and cod off the Faroes.

Pacific cod and black cod will be fished in the Pacific by a new Autoliner-purse seiner being built in Vancouver and Labrador.

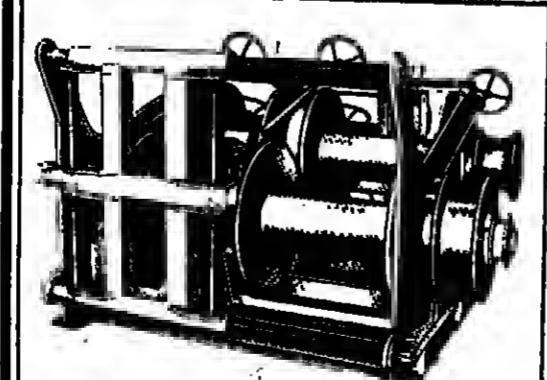
## DESIGNERS AND BUILDERS OF 80 - 180 FEET FISHING VESSELS



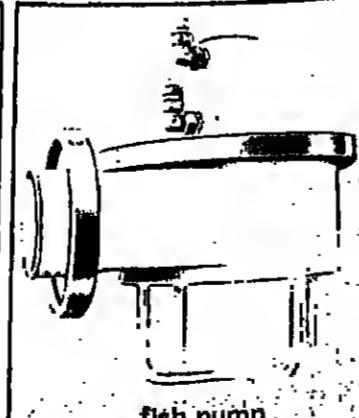
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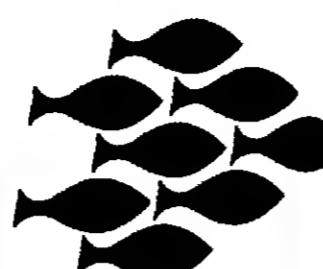


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## Nor-Fishing '78



BAADER KEEPS UP THE PACE — turn to pages 22 and 23

# THE BABY OF THE FAMILY

## Small boat sonar from Simrad

Stabilised to keep constant contact with the target even when the boat is pitching.

Shown as a 12-inch diagonal screen, the PPI presentation can be started from the bottom, centre or top of the screen.

Direction of the sonar beam can be altered at any time to give a new search pattern, and bearing can be manually controlled.

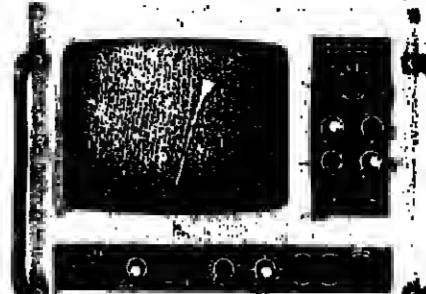
The SY sonar has eight ranges from 75 to 1500 metres.

A special feature is the one-ping memory which improves detection especially on longer ranges.

A scope filter takes away a lot of the noise echoes.

Visitors to the Simrad stand will also have a chance of seeing and discussing the new catch indicating system. This has a very successful debut in Norway's blue whiting fishery off the Faroes in the spring of 1978.

Trawling far blue whiting can be difficult.



SY sonar — ideal for small boats.

Because of the great amount of fish, nets have been filled in 10 to 20 minutes. This has resulted in damaged nets, loss of catch and a break in fishing to carry out repairs.

To try and solve the problem, Simrad set up a research team and in 1977 its work led to the catch indicator which can be used in conjunction with the Simrad trawl eye.

"Initially," said the company, "we tried to

keep the number of indicators in use as low as possible due to the uncertainties there will always be with new products."

Despite this, 40 trawl eyes with catch indicators were used by blue whiting vessels.

At the end of the season — a record one with a blue whiting catch of 115,000 tons — Simrad arranged conferences in Bergen and Alesund.

Users were invited to talk about their experiences and to discuss any problems.

The indicator was used about 1,300 times in the season.

"Considering this," said Simrad, "the problems with the equipment were small."

"The information we have collected will result in improvements to the equipment and its installation — and in the preparation of an operator's manual."

The broad conclusion of the two conferences was that the trawl eye with indicator was an absolute necessity when trawling for blue whiting. Some users thought it improved catching efficiency by at least 50 per cent.

## Stickwater plant uses waste heat

A WASTE HEAT evaporator for concentrating stickwater will be one of the products featured on the stand of Stord Bartz, the Bergen-based engineering firm which has supplied equipment to more than 600 fish meal plants in 60 countries.

This vacuum evaporator works on the same principle as the ordinary stickwater evaporator. But it uses exhaust vapour from the drier instead of live steam. And this, says Stord Bartz, saves up to 20 per cent in fuel costs.

The evaporator can be supplied as a one-effect or two-effect machine.

Exhaust vapour from the drier is sucked through the system by a centrifugal fan and is supplied to a heat exchanger in which the circulation tubes for stickwater are located.

Condensate is discharged to drain or to water treatment plant. Waste vapour from sources other than the drier comes through the inlet valve.

Gases not condensed are recirculated to the drier after having passed through a demister and a preheater.

The liquid side of the evaporator works under vacuum by means of a barometric condenser with vacuum pump. The boiling stickwater is circulated via the cyclone in which the evaporation takes place. Stickwater concentrate is discharged by the pump.

## RODDING MACHINE

AMONG the processing machines to be shown by Trio Maskinindustri will be a new device designed to rod mackerel, herring and similar fish, heads on or off.

The fish are placed by hand on a special feed table. Rodding is done mechanically by pushing release levers. The rod with fish is then lifted out manually and placed in the smoking frame.

The machine can be adjusted for different fish species and sizes.

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Nor-Fishing

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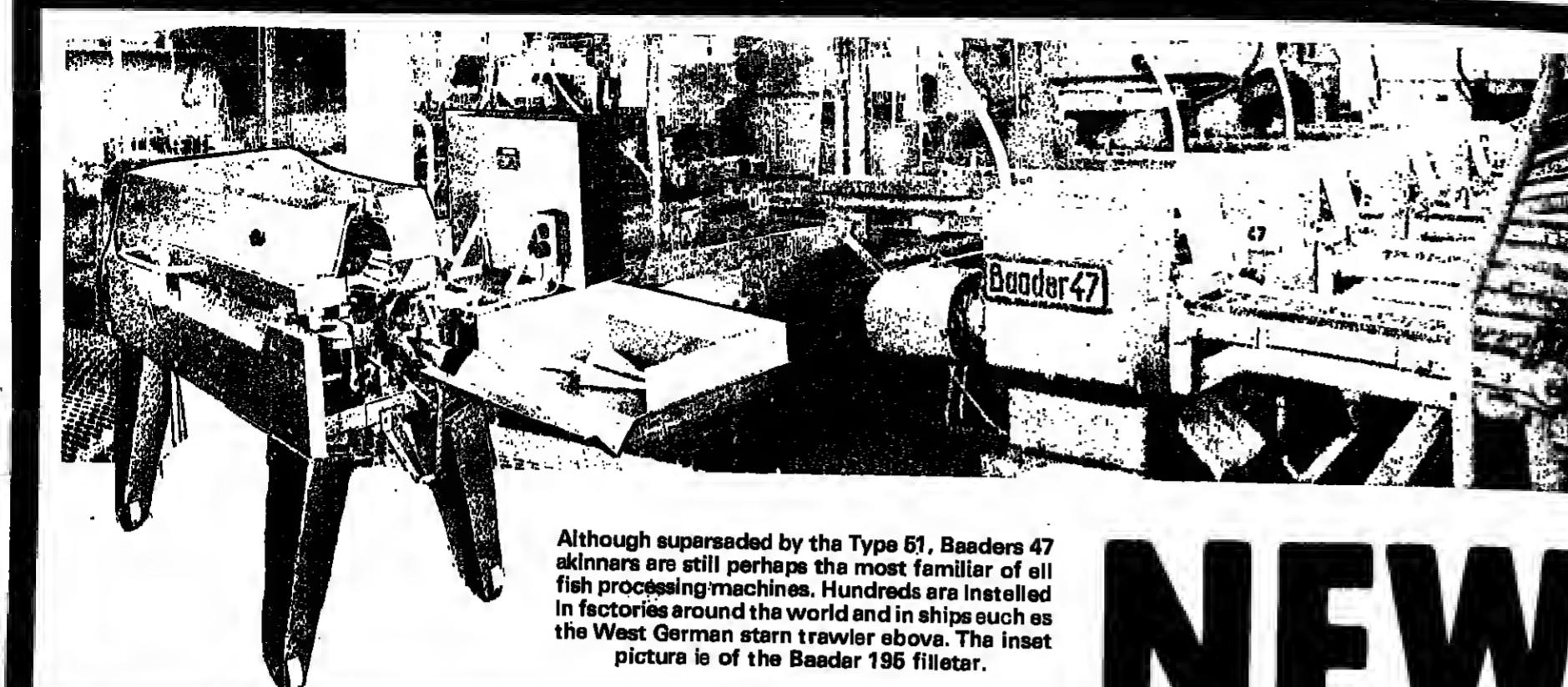
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Although superseded by the Type 51, Baader's 47 skinners are still perhaps the most familiar of all fish processing machines. Hundreds are installed in factories around the world and in ships such as the West German stern trawler above. The inset picture is of the Baader 195 filletar.

# NEW

## THE LATEST NEWS ON FISHERIES

During the period 20-26 November The 7th International Fisheries Fair, Nor-Fishing '78 — will be held in Oslo. This is a trade fair of a high, international standard, where you will meet people from all over the world, with a strong interest in and knowledge of the fisheries industry. Nor-Fishing is considered to be one of the leading fisheries fairs in the world. Large and small firms present their products and news for the fisheries industry, and you will have a unique opportunity to find out about the very latest news in this field.

In conjunction with the exhibition we invite you to participate in the seminars to be held at The Sjølyst Centre.



The International Nor-Fishing seminar: POST-HARVEST TECHNOLOGY AND INVESTMENT IN DEVELOPING FISHERIES

20th Nov  
Firm presentation: TARGETS FOR FISHERIES DEVELOPMENT  
Opening dinner - Norwegian dinner  
Special registration is required.  
Attendance Nkr. 200,-.

21st Nov.  
POST-HARVEST TECHNOLOGY  
Speakers:  
Dr. P. Martin, Project Coordinator for IOC, Oceans Food Processors Ltd., Ovyeve.  
Dr. Wolfgang Krone, Chief, Fish Utilization and Marketing Service, FAO, Rome.  
Mrs. J. Mead Kordylew, Officer-in-charge, Food Research Institute, Qaraq.  
Ove Lævdal, Managing Director, FICECO (Fishes Development) Co. Ltd., Norway.  
Abdul Karim, MARDI, Malaysia.

This first session will be devoted to the improvement of post-harvest technology in developing fisheries and to means of expanding the use of underexploited resources through more efficient handling and preservation of existing new products and processing methods. Special market identification and promotion. The question of reducing post-harvest losses and the use of trash fish and unconventional species will receive particular attention.

INVESTMENT NEEDS IN DEVELOPING FISHERIES  
Speakers:  
Oskarso Lee, Chief, Agriculture

In November Oslo stands forth as a "city of light" as all of the Christmas displays begin this time. For this reason you will have the chance to make pleasant shopping trips. In addition, we strongly recommend visits to the many restaurants, which typify Norwegian Christmas specialties. We hope you will visit Oslo in November, and have some memorable days with people from all over the world sharing your interests.

Mond. 12-16 Weekd. 10-18 Saturd. 10-18, Sund. 13-18. Exhibition Pass and catalogue Nkr. 20,-.

To: Nor-Fishing '78, Norges Varemesse, P.O. Box 130 Skøyen, Oslo 2, Norway.

- Please send me the exhibition catalogue free of charge
- I want to attend the International seminar
- I want to attend the national seminar
- I want to attend the International seminar dinner

Please use block lettering

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FOR NEARLY 60 years, the history of fish processing has been deeply influenced by the development of machines, first started at Nordischer Maschinenbau Rud. Baader in Luebeck.

After the mechanical processing of fish with bone removing machines for herrings, an array of other machines evolved for heading, cutting, filleting and skinning; for special processes such as nobbing of sardines and herrings; machines for drying plants; sorters, washers, descalers and bone cutters and bone separators.

Baader is not only the oldest, but is also recognised as still the leading maker of these complex processing machines.

Combining research, technical know-how and practical experience, we have developed machines and complete factory lines for use ashore or at sea. In fact, fish processing at sea is one of the basic ideas developed in Luebeck at Baader's as far back as the 1920s.

### Pose new problems

But increasing international use of Baader machines continues to pose new problems for our technicians. Fish, even of the same kind, can vary considerably in the same area, depending on growth conditions and other factors.

For this reason, machines often have to be readjusted or rebuilt to suit changes in conditions. This requires long and complicated tests at the actual location.

To quote a recent example: Several years ago our white fish filleting machine, the Baader 190, was developed to produce bone-free fillets. This machine has been widely used in European fish plants, at sea and ashore.

But overfishing of traditional grounds, spreading fishing zones and cuts in catch quotas have forced an increasing trip to distant grounds.

Through this, it was found that the Cope hake (*Merluccius capensis*) in the south-east Atlantic could be filleted by the 190 machine.

Hake of merluccius also occurs in large stocks across the South Atlantic off eastern South America. But this hake (*Merluccius hubbsi*) differs from the Southern African hake in structure.

Baader technicians had to carry out extensive tests on the fish. They were finally able to adapt the 190 to the South American hake by remodelling a few components.

Our involvement in fishing has created a reputation which puts us under a world-wide obligation. This takes us beyond further development of tried and proved machines to new processing principles and their application to types of fish which, up to now, have never been mechanically processed.

We might take the Australian fish industry as an example. Baader engineers had long thought of ways to process these tropical water-

### BAADER:

# MACHINES TO MEET CHALLENGES



Baader in action in an Icelandic factory.

### the story continues

fish by machine. But, because of the many varieties, it was not possible to consider a special machine for each.

It was decided therefore to work on one machine which could fillet different types without the need for alterations. The problem is not so much the outer shape but the arrangement of the ribs. This varies species by species and needs special knife components.

Our solution was the Baader 195 machine and the prototype went out to Australia for extensive tests on site.

These trials took months to complete and involved both the Baader team and Australian processors.

The original idea of one machine for different species was shown to be right and it was even found that the range of the 195 could be considerably widened.

Fish which can process

include mullet (*Mugil cephalus*), barboreto (*Thyrsites atun*), wahoo (*Seriola brama*), dorado (*Cirrhinus hippurus*), pompano (*Trachinotus carolinus*), Spanish mackerel, red snapper and sea trout.

Then we found that it could also fillet the red perch (*Sebastes marinus*) well known in European waters.

Long-standing ideas and modern technology can be combined to bring in new mechanical developments, as with our fillet skinning machine, the Baader 51.

Our earlier machines applied two skinning principles:

1 Cutting and skinning starting at the tail through the interplay of oscillating knife and clamp rollers. The Baader 47 works in this way but the tail end starts means some waste.

The 50 has been found very suitable with the 195 for tropical fish.

Also, this principle is

AT ALMOST every major fishing show the Baader stand has come to be regarded both as a focus of interest and as a sign that the exhibition is likely to attract the fish processors. The stand is almost always large, expensive and packed with machines and it is a place where people can bring their processing problems for expert attention.

In this article Dieter Rother of Baader explains how his company strives to maintain the lead in machine processing.

**SHIMRAD SY** New sonar for small and medium size vessels.

With PPI scope presentation.



Sweep start at the bottom for searching ahead.

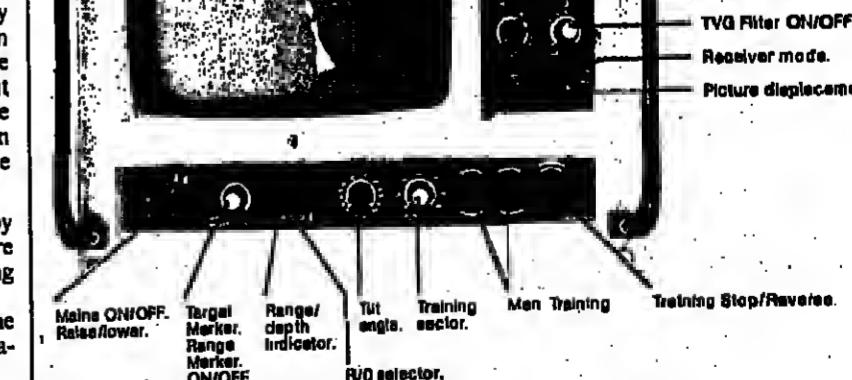
Sweep start at the center for searching to the side.

Sweep start at the top for searching behind the vessel.

The Simrad SY Sonar is the ideal sonar for smaller vessels fishing in reasonably shallow water. The SY consists of a cabinet with a unique type of PPI presentation, a small but powerful transducer and a rugged dome which is especially beneficial for working in shallow water or for picking up fish just off the sea bed.

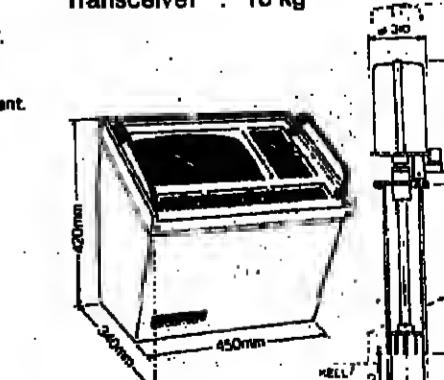
The hull unit has been designed to fit the smallest of professional fishing vessels and is a lot lighter compared with its rugged construction.

Weight:  
Hull unit : 165 kg  
Cabinet : 25 kg  
Transceiver : 16 kg

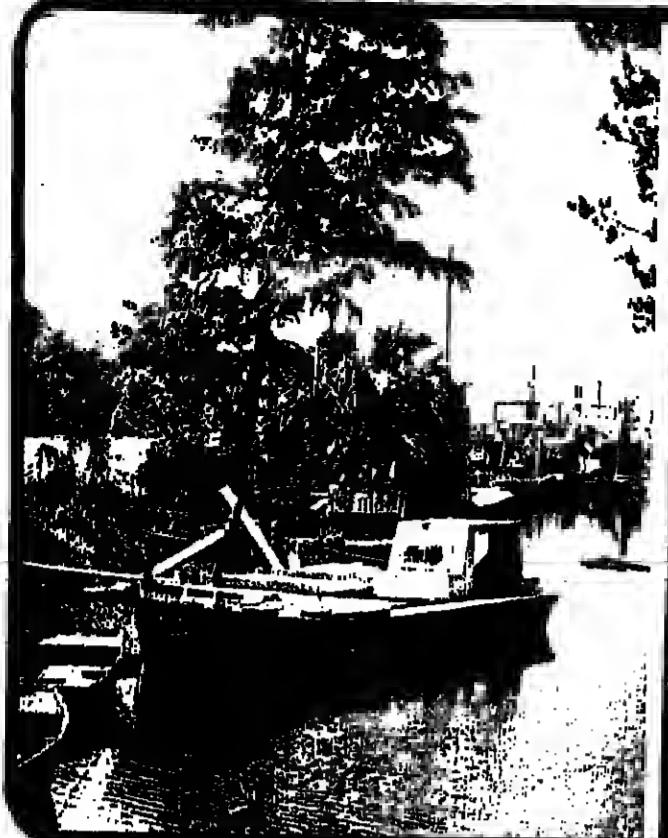


To be seen at Nor-Fishing '78, stand no. 231, hall E

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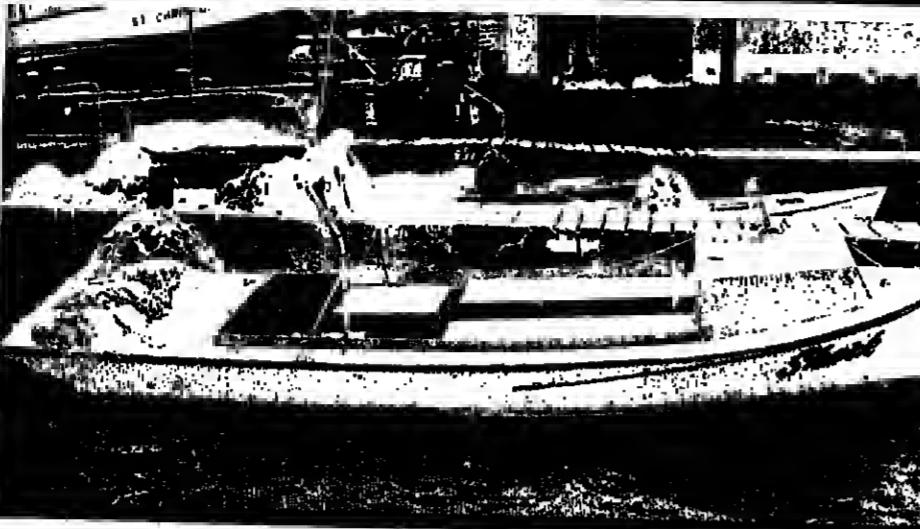


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# Small is big



A MULLET and trout gill net skiff awaits her crew for a night trip.

## SKIFFS BRING HOME A VITAL CATCH

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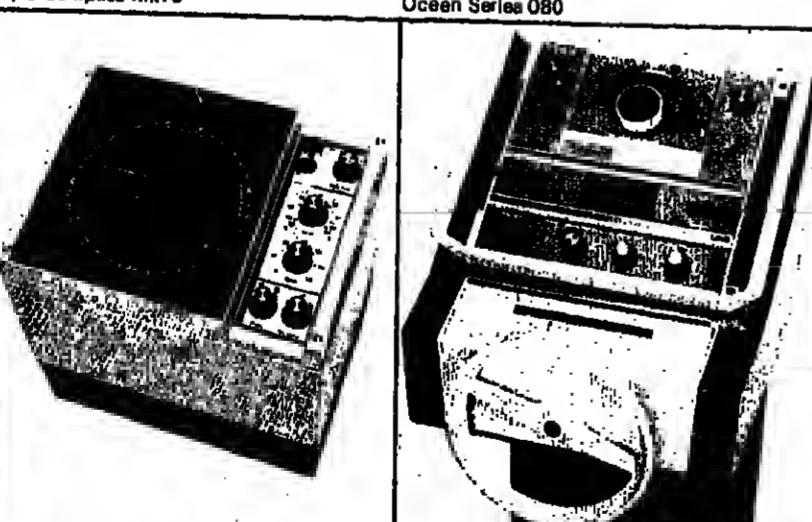
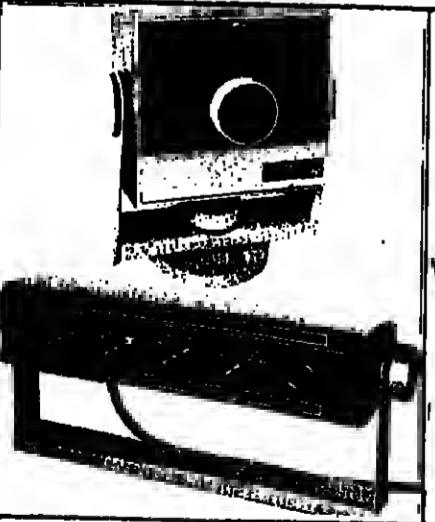
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MENTION the Gulf of Mexico fisheries and the immediate image is of high-capacity shrimp trawlers, advanced technology and large processing plants. But the United States Gulf coast is also the base area for some important small-scale fisheries, described here by JEFFREY A. FISHER.

FOR A LONG time, the small-boat fisheries of the Gulf of Mexico have been making a substantial contribution to the local economies of southern United States fishing communities.

These fisheries have never attracted attention like the traditional large-scale operations for shrimp, lobster, and bottom fish. They include catching of oysters, blue crabs, mullet and sea trout.

Small-boat fisheries in the area are conducted from skiffs 4.8 to 8 metres long. The boats are powered mostly with outboard motors of 20ft. 75 h.p. Some have inboard petrol engines; a few have small diesels.

Designs of skiffs around the Gulf vary. Usually flat bottom, wood boats with a

shallow draft, they are meant for inshore protected waters.

Black mullet and speckled sea trout are taken by the same fishing unit. The catch method is a shallow (2 to 4 m) gill net, ranging from 300 to 600 metres in length.

#### Bayous

The fishing is done almost entirely in bays, bayous, estuaries, river mouths, inlets, etc., and most of the catches are taken in spring (March-May) and autumn (September-November).

The five-year average (1972-1976) for total US landings of mullet is about 15,400 metric tons (33.9 million US lb). In 1977, landings dropped by one-third to less than 10,000 tonnes (22 million US lb). From 1976 to 1977, landings

## UNITED STATES

value decreased from \$4.5 to \$4 million. This decline was due to the 33 per cent drop in volume.

In recent years, dockside prices have been increasing. As late as 1972, prices were always about 10 cents a lb or less.

In 1973, ex-vessel prices jumped two to five cents depending on area. In 1977, the price approached 20 cents. There are two reasons for this doubling in four years. First, landings have declined as noted. Second, black mullet is prized by the Japanese. This new export market has developed.

Speckled or spotted sea trout represent a "second catch" of the mullet fishery. The US 1972-1976 average annual catch was 3.5 million kilos. Since 1971, the dockside price has not gone below 30 cents a lb. Recently, prices in the range 45 to 60 cents have been common.

Since trout landings are not very great, the fish seldom reaches markets beyond the US Gulf and Atlantic Coast. The principal outlets for both speckled trout and mullet are restaurants and household consumers, as drawn, dressed or fillets. There is generally no further processing or packaging.

Oysters are harvested in two ways. Manual tongs three to five metres long are used to rake and pull oysters off the bar. In some areas, small dredges are towed over a bar. The Gulf dredges are approximately one metre wide, possessing a chain end nylon bag. The rake of the dredge has teeth to pull oysters off the bar.

#### Bushels

Oysters are marketed in the shell by the bushel (local volume varies) and already shucked meat in pints (0.47 litres) and gallons (3.8 litres).

Spanish mackerel on these boats are taken with deep gill nets of various size meshes. Each boat carries several nets (sometimes up to 12) for different conditions. A crew of one to two operate less than 250 boats. All boats fish for other resources at certain times of the year.

Average US oyster landings (1972-76) were 52 million lb. (22,900 tonnes), shucked meat. In 1977 landings were 46 million lb. In that same year, the average dockside

price was \$1.14/lb. oyster meat.

In the Gulf of Mexico, only hard-shell bluecrabs are landed in quantity. The techniques and values of a soft shell crab industry are not well known in the Gulf.

Some blue crabs enter the US market channel as a bycatch from shrimp trawling.

The primary harvest method is trapping. One or two men operate a trapline. The traps are baited with fish heads and racks, buoyed on individual lines, and made of galvanized or plastic coated wire. Trap dimensions are approximately 60 cm x 60 cm x 45 cm. Peak production is between May and September.

#### Landings

The five-year US average landings (1972-76) of hard blue crabs was 60,000 tonnes (134 million lb). In 1976, dockside price was 23 cents/lb; in 1977 it was 21 cents/lb. Prices are for whole animal, not picked meat.

In certain geographical areas, other small boat fisheries are extremely important. These include eels, bay scallops, flounders, stone crabs, and "beach fish." Beach fish in the Gulf primarily means pompano and cigar fish.

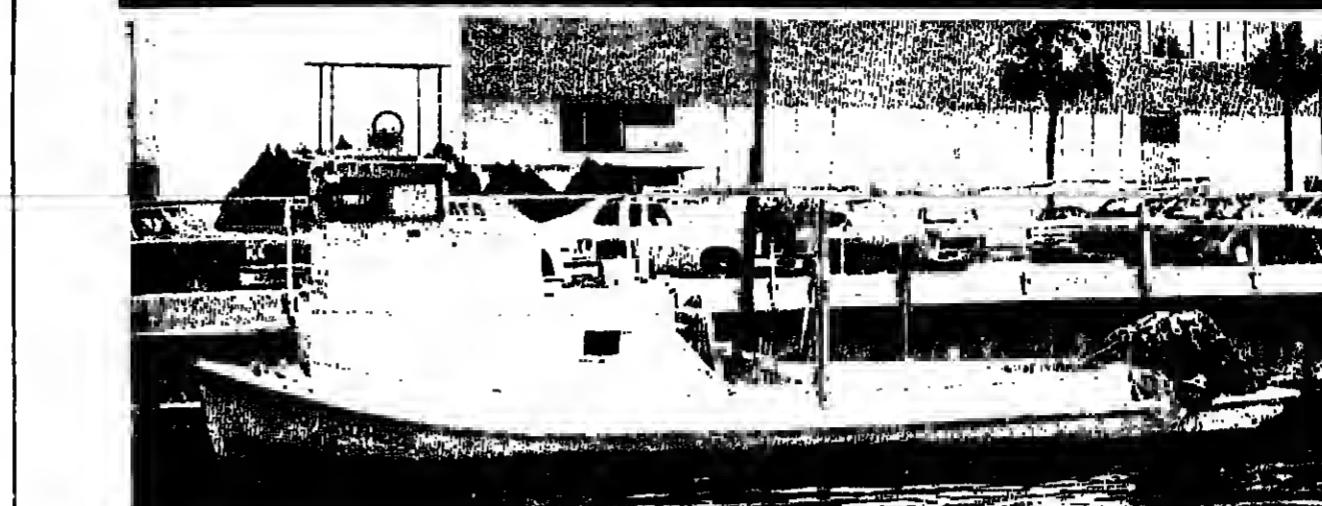
There is at least one fishery that doesn't classify well in terms of boat size. This is the mackerel fishery. King and Spanish mackerel are the main resources. Fishing methods, investment, costs and returns differ between the two.

A bona fide small boat portion of the Spanish mackerel fishery exists. These boats are approximately five to six metres long, of glassfibre construction, and powered by petrol engines of 100 to 250 horsepower. They hold from 1,100 to 2,700 kg of fish.

Spanish mackerel on these boats are taken with deep gill nets of various size meshes. Each boat carries several nets (sometimes up to 12) for different conditions. A crew of one to two operate less than 250 boats. All boats fish for other resources at certain times of the year.

The five-year average annual landing for Spanish mackerel in the US was 5,042 tonnes.

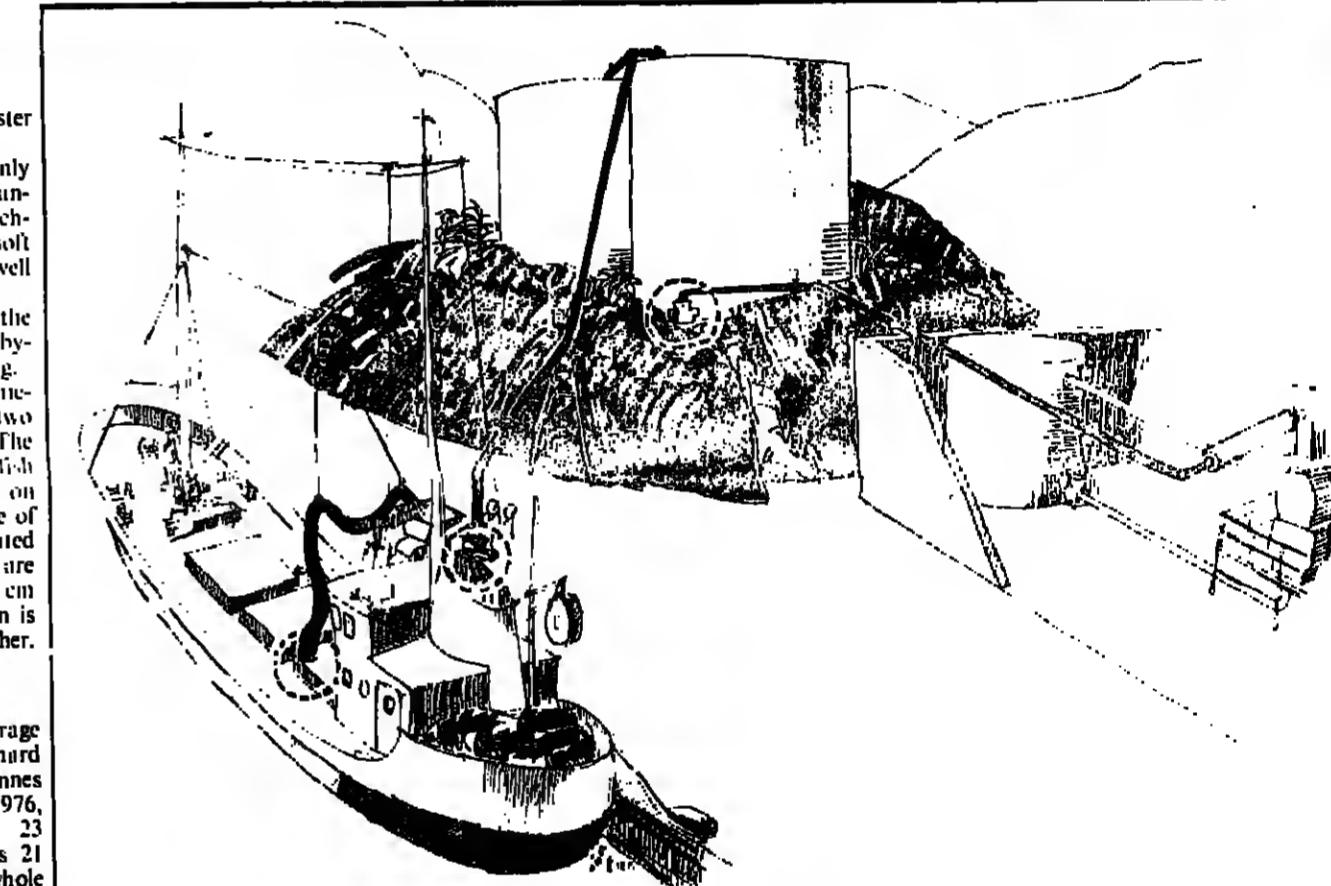
# in the Gulf



THIS TYPICAL beach seine skiff's built-up fore deck enables her skipper to see the fish.



TYPICAL CATCH of black mullet from one skiff.



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## FOCUS ON SOUTH PACIFIC FISHERIES...

# Papua puts accent on skipjack boost

**PAPUA NEW GUINEA** has formulated a new fisheries policy which will give the national government, and not individual provincial governments, control over the fish resources of the country. But provincial fishery councils and a national advisory board will be constituted to encourage co-operation between national and provincial governments.

With the recent declaration of a 200-mile economic zone, Papua New Guinea has control over some 700,000 square miles of sea. The potential skipjack tuna and billfish catch in this area is estimated at around 100,000 tons a year.

The government's long-term policy is for the PNG tuna and other fish stocks to be taken by a national fleet and to have most of the tuna processed locally in government joint venture projects with foreign investors.

It is planning a fleet capable of fully exploiting tuna resources in the EEZ within ten years. To help achieve this, the government is negotiating with the Asian Development Bank for funds to acquire the first eight to ten vessels.

In the meantime, foreign vessels are being allowed to work PNG waters on payment of a licence fee each year, and a levy on the fish caught but not processed in PNG.

A national training programme has been started to train local people in various methods of tuna catching, particularly the use of pole and line for skipjack.

Although presently the third largest supplier of skipjack, PNG as yet has no shore bases and process plant. The fish taken there is transferred to a mother ship which transports it to Japan or the USA for processing.

Four companies, with Japanese, United States and Australian shareholding, have tuna rights in PNG waters. But Starkist Inc. of California will probably be the first to engage in a joint venture tuna canning project.

The factory will be located

on Manus Island and will process skipjack for export and for domestic consumption. The ownership arrangement is interesting.

Initially it will be 40 percent Starkist, 40 per cent PNG government and 20 per cent World Bank. Eventually the PNG government will buyout the World Bank's share and thus gain the controlling interest.

### Tentative

Tentative plans are also reported for further processing plants on New Ireland, East New Britain.

Fish exploitation of the big tuna resource is expected to have a considerable impact on the PNG economy. The government has therefore given fishery projects high priority in its recent review of individual industry policies.

It will, for example, finance half the cost of carrying out feasibility studies in the fishery industry.

## New agency?

**PAPUA NEW GUINEA** has one of the major fishery industries among the vast spread of islands and micro-states in the South Pacific region.

It has, therefore, been keenly interested in the attempt over the past year to set up a South Pacific Regional Fisheries Agency. This would co-ordinate licensing, surveillance and conservation of marine resources for countries which, individually, might find it impossible to carry out such work.

The work of establishing the Agency is being done by the South Pacific Forum. In addition to Papua New Guinea, its members include Fiji, Tonga, Western Samoa, Solomon Islands, Nauru, Niue, Cook Islands, Gilbert Islands, and Tuvalu. The last named is the latest of the independent states formerly the Ellice Islands.

Together, the members of the South Pacific Forum control more than six million square miles of ocean, and this includes some of the best remaining areas for tuna.

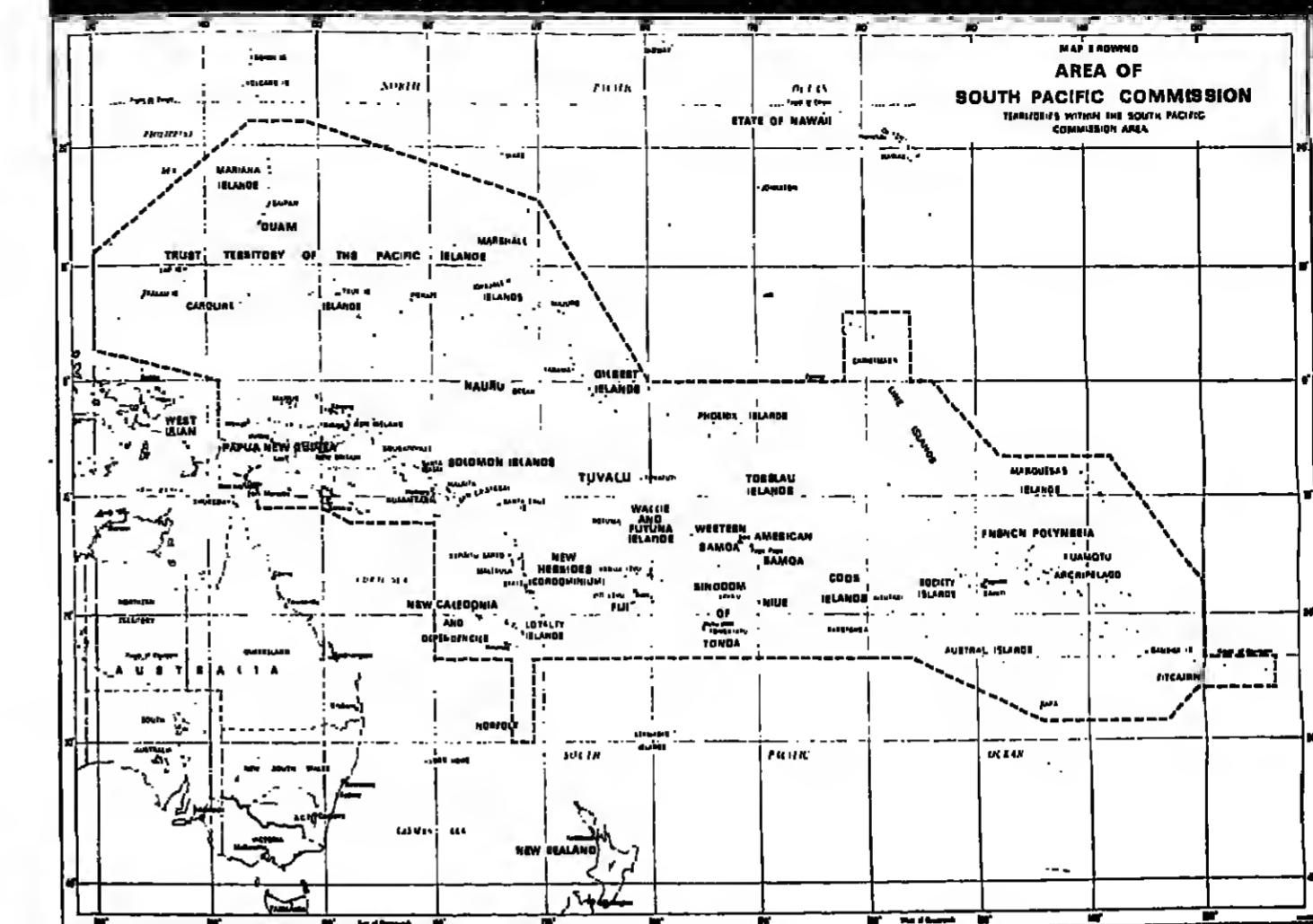
When it met in Niue in September, the South Pacific Forum decided to go ahead with the fisheries agency. But there are difficulties over membership of the United States, whose policy towards tuna in the high seas conflicts with that of the South Pacific countries.

One of the island groups, American Samoa, is an unincorporated territory of the United States.

	Population (1977)	Land Area (km²)	EEZ Area (900 km²)	Area per head (km²)
American Samoa	50,000	107	410	13
Cook Islands	18,000	210	2,200	112
Fiji	832,000	15,200	1,370	2
French Polynesia	157,000	4,093	8,369	23
Gilbert Islands	52,800	664	4,429	63
Kiribati	7,300	30	290	43
New Caledonia	134,000	13,100	3,640	11
New Hebrides	99,000	11,400	3,400	7
Niue	3,000	460	560	92
Norfolk Island	1,900	35	520	300
Palau	2,900,000	481,692	2,300	1
Pitcairn Island	65	4	970	1,455
Samoa	206,000	35,809	1,620	206
Solomon Islands	1,800	10	350	200
Tonga	86,000	697	720	1
Trust Territory of the Pacific Islands (incl. Guam)	318,000	1,800	7,460	36
Tuvalu	7,800	1	760	101
Wallis and Futuna	9,700	18	820	21
Western Samoa	132,000	1,954	1,800	1

This table from the July 1978, Fisheries Newsletter of the South Pacific Commission includes the island states engaged in setting up a regional fisheries agency. It shows populations, land areas, approximate sizes of the 200-mile economic zones, and their area per head.

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## The area

THIS MAP of the South Pacific Commission area shows the island countries that will be involved in the proposed regional fisheries agency. The South Pacific Commission is a consultative and advisory body set up in 1947 by the six governments then responsible for the administration of the island territories in the region. Many island states joined the Commission as they gained independence.

## Tagging along with the tuna...

THE THREE-YEAR South Pacific skipjack tagging programme, which began in October, 1977, has been going remarkably well. By the end of June, 1978, the programme's vessel had tagged 43,000 skipjack and other oceanic tunas. This exceeded the target for the whole year by more than 13,000. And it included the release of 2,985 tagged skipjack in one day.

By early September, some 1,000 captures of tagged fish had been reported, including five international recoveries.

### Distant swimmers

One fish tagged in Fiji waters on February 28 was caught off Queen Salote pier in the Kingdom of Tonga on July 15, having travelled some 500 km.

Another skipjack tagged in Tongan waters in April was caught six weeks later 600 km away in Samoan waters.

The tagging programme is being supported by six countries interested in the skipjack industry.

Apart from actual tagging, the research team carried out a survey of live bait resources in all territories within the aegis of the South Pacific Commission. (See map).

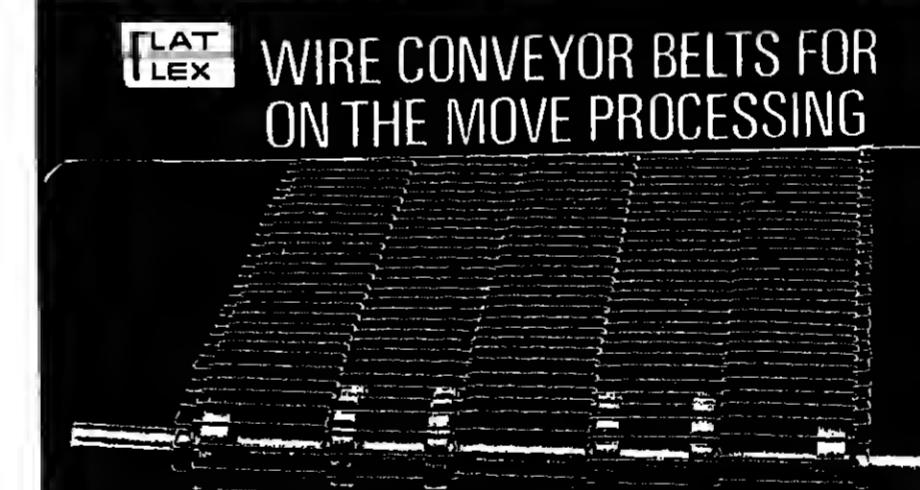
The vessel used in the programme is the *Hatsukoi Maru*, a 35.4 metre long chartered pole and line boat. She has five live bait wells with a combined tank capacity of 74.6 cubic metres.

Co-ordinator of the programme is Dr. Robert Kearney.

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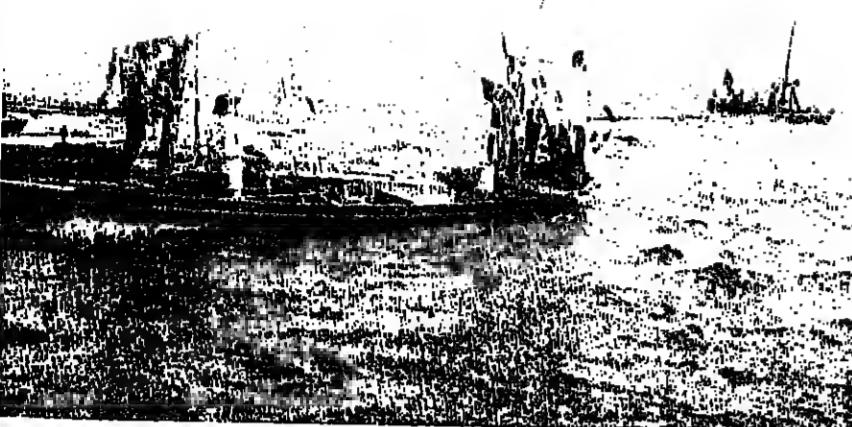
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Clean blue skies and a promising sea... fishing from small sailing boats for skipjack in the Maldives.

# MALDIVES

ICELAND is not the only small island country that relies on fish for most of its export earnings. As our Pakistan correspondent S. RASHID ALI shows in this article, fishing is a vital industry in the tiny Republic of Maldives, and provides 97 per cent of exports.

MALDIVES is the smallest independent country in Asia and one of the smallest in the world. It consists of 1,196 coral islands divided into 19 atolls and lies about 400 miles south-west of Colombo, Sri Lanka.

The population is about 150,000.

White sandy beaches and clear blue skies endow the scenery of the islands with a rare beauty. Life there is simple, and the islands are attractive to visitors who enjoy swimming, deepsea fishing, skin diving, boating and shell collecting.

The islands of the Republic spread over a wide area and, with its new 200-mile economic zone, it claims a sea area about ten times that of the land. It is not surprising therefore to find that fishing is by far the most developed sector of the Maldivian economy. Between 80 and 90 per cent of the population is engaged in one way or another in this industry.

#### Outside

But the total catch is still just over 30,000 tons a year and earnings from fishing are not enough to capitalise further development and necessary modernisation.

For this reason, the Maldivian government has been looking outside for aid and technical assistance. Since 1971, this has come from the UN Development Programme/FAO, and from

such countries as Japan, Iran, India, Korea, Kuwait and Thailand.

The islands depended on Sri Lanka as an outlet for dried/salted fish until the Japanese and Thailand companies began buying directly from the fishermen, paying cash for it. This is gaining in popularity for the simple reason that it saves much labour and time. Normally, processing of Maldivian fish takes about three to four weeks.

#### Approval

No foreign boats, including those of the Japanese and Bangkok, ever enter the Maldivian 200-mile zone without approval from the government.

Apart from the direct sales, marine products exported include frozen tuna and skipjack, some varieties of frozen white fish, dried reef fish, dry salted fish, some meat, shark meat and fins, tortoise shells, red coral, cowries and ambergris.

Total exports in 1977 amounted to 10,200 metric tons. Of this amount, just over 85 per cent comprised frozen skipjack and tuna.

The export of dry salted fish to Sri Lanka was resumed in 1973 and has been gaining

# A micro country seeking a macro fishery

## SRI LANKA WELCOMES HOME THE FISH

A BUSY beach on the southern coast of Sri Lanka. The many outboard motors on these small boats indicate the extent to which fishing in the area is becoming motorised.



SRI LANKA'S fishing industry is returning to normal after a period of scarcity and soaring prices.

FNI correspondent Nalin Wijesekere reports that on the southern coast Galle brought in a harvest of more than 100,000 lb in a recent spell of good fishing. This is the best result in about ten years and helped bring down the retail price of fresh fish.

One result of this good fishing has been better use of Galle harbour. For example, the trawler *Bernice* came

into harbour with a catch of 65 tons taken on a 15-day trip.

On the east coast, Trincomalee has been getting big landings of catfish and horse mackerel. The fishing season here begins in March and continues to late in December although the migrant fishermen usually leave before the beginning of the rainy season in October. But this year they left early and so

local fishermen have been getting unprecedented harvests.

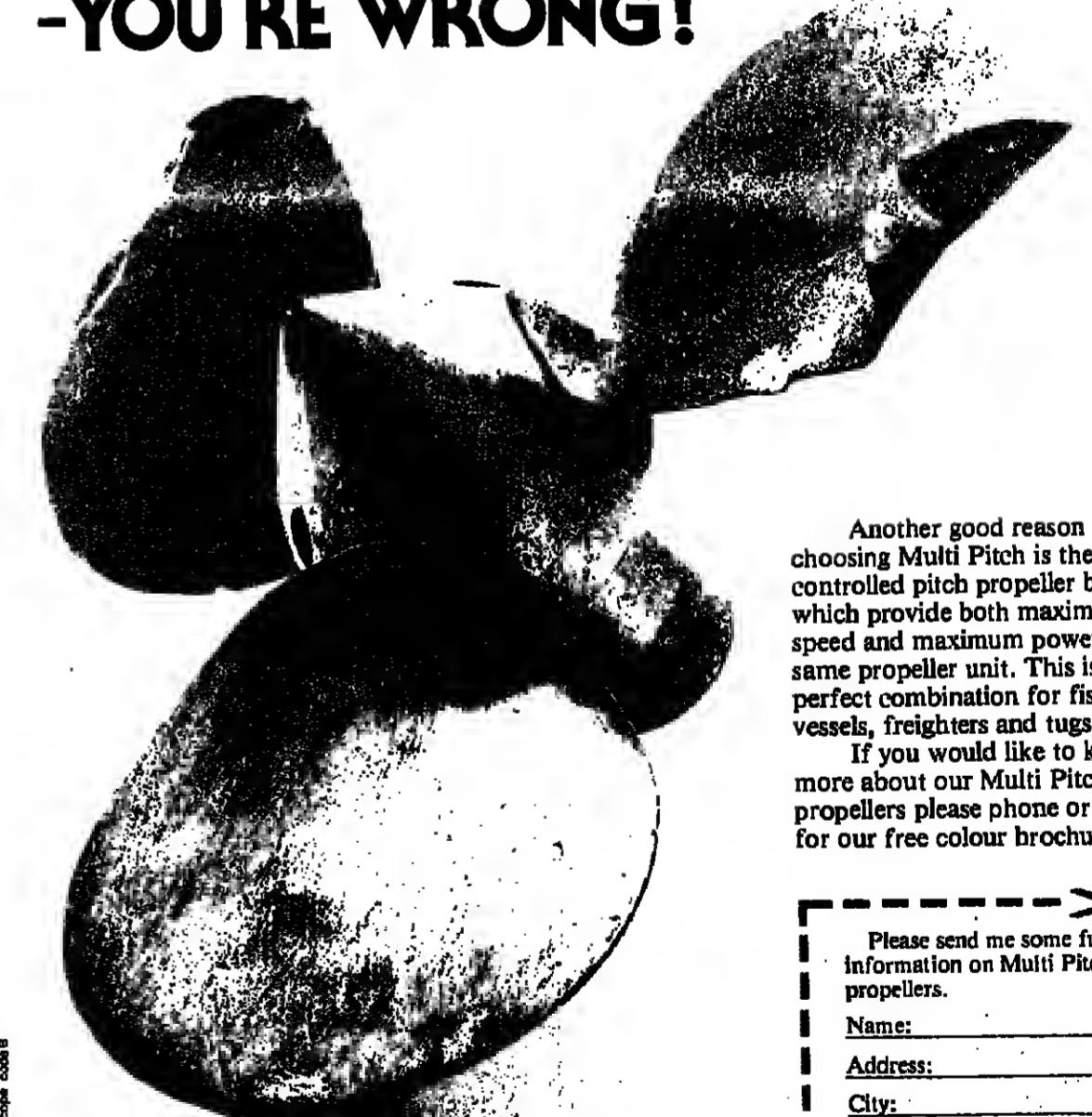
The Negombo and Kalpitiya areas along the west coast have been busy as outriggers and hench seine boats bring in big catches.

Large amounts of herring and yellowfin tuna are also being caught. The Ceylon Fisheries Corporation can-

neries in Pesali — virtually idle for a long time — has been getting ready to pack catches surplus to market needs.

With the improvement in supplies, fish prices have been coming down from the peaks of a few months ago. And fishermen's earnings, where catching has been good, have gone up to around Rs 1000 (L34) a week.

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Continued from page 23.

This machine's rotating knife belt also allows greater working width and a faster fillet sequence.

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depending on the skill and number of operators, and it yields a high quality product. Through the improved efficiency and larger working width of the 51 Skinner, it has been found possible, through small alterations to the fillet delivery belts, to work machines such as the Baader 150, 181, 189 or 190 on only one skinner, instead of the two 47s used until now.

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And since this encounter between propeller blade and stone always means that you have to buy a new propeller, such little accidents can become an irritating expense.

## Fishing for increased profits?



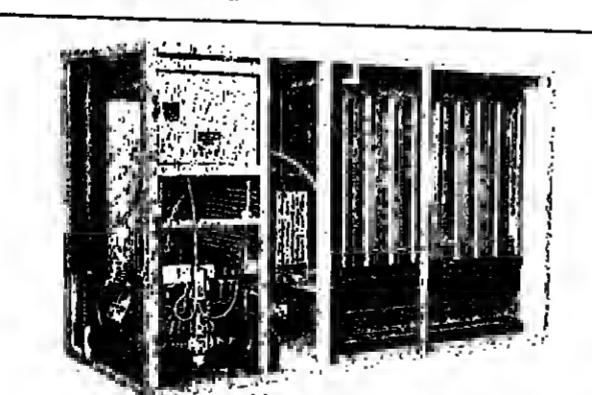
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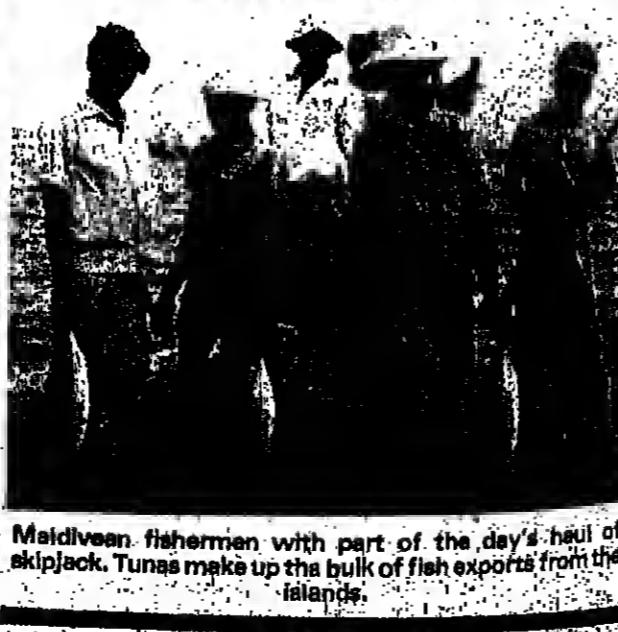
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Technical aid helps improve designs. This modified skipjack boat was developed with the assistance of FAO naval architect John Fyson.



Maldivian fishermen with part of the day's haul of skipjack. Tunas make up the bulk of fish exports from the islands.

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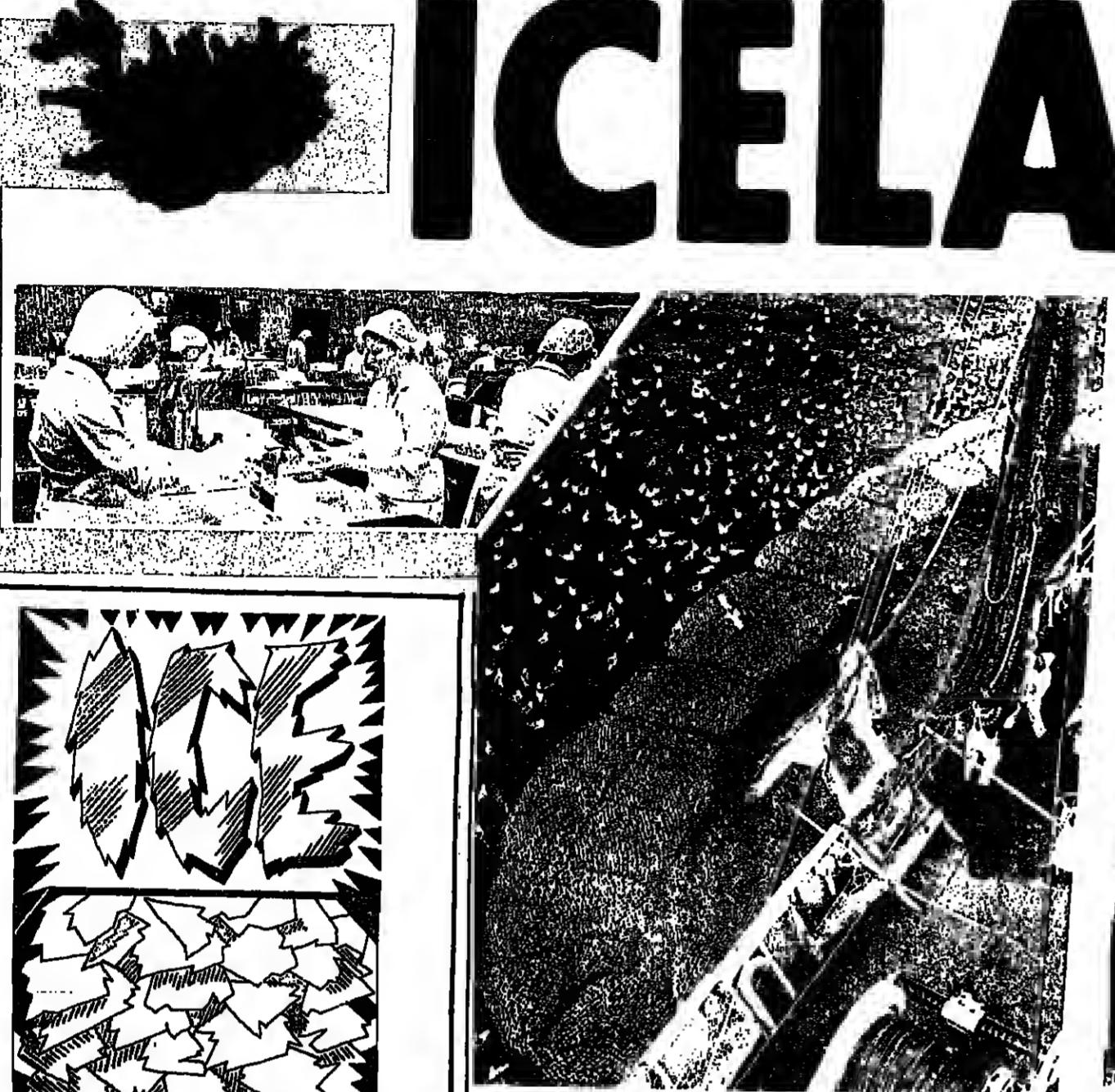
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# ICELAND INSIDE HER LIMITS



Top left: Weighing and packing fillets in an Icelandic factory.  
Above: At sea, and a huge catch of blue whiting comes aboard. Attempts have been made to process this fish for the US market but with little success so far.

**DAVID GLEN looks at how Iceland's fishing industry has fared in the three years since she declared a 200-mile zone.**

IT IS JUST three years since Iceland declared an exclusive 200-mile fishing limit and fought for it in one of the bitterest "cod wars" of them all.

She took on Britain's government, her navy and her fishing industry, and won.

But that's all over. The last British trawler in Icelandic waters has long since hauled her gear and disappeared, hull down, over the horizon.

Today, British manufacturers of fishing gear and equipment are seeking a greater share of the Icelandic market; and the Icelanders are looking to the time when Britain will be second only to the United States as a major outlet for frozen fish.

Even that dogged fraterninity, the "lumpers" of Grimsby, have at last removed their longstanding ban on unloading of Icelandic fishing vessels at the east-coast port.

Past hostilities are being forgotten and new friendships forged.

So how has Iceland fared since that eventful day of October 15, 1975, when she became the first European fishing nation to declare an exclusive 200-mile zone?

Firstly, her cod catch has increased markedly:

A combination of careful conservation measures, good year classes and the departure of foreign trawlers has pushed cod landings from 266,000 tons in 1975 to 330,000 tons last year.

The haddock catch — seemingly affected by a five-year cycle — was 24 per cent up in the first five months of this year. Overall 1977 haddock landings were 35,000 tons.

The total groundfish catch — which includes saithe, ling, ocean codfish and redfish — has increased from 439,000 tons to 489,000 tons over the three years.

In the pelagic sector, herring is showing encouraging signs of revival, especially in the south-east. This year's quota has been stepped up from 25,000 tons to 35,000 tons.

But it is capelin that shows the most dramatic improvement of all, thanks to the discovery two years ago of a totally new summer fishery.

In 1976 the catch was 459,000 tons; last year it was 809,000 tons, and predictions this year are that it will top 900,000 tons.

The second major development for Iceland has been a healthy upturn in the market for frozen fish.

After a period of depression, prices of fillets and blocks on the US market rose sharply by the end of 1976. There were further increases in 1977 and prices now look like levelling off at a new high.

where landings continue to be sporadic, the freezing plants have swung into full production, working a ten-hour day, five to six days a week.

They have now reached a break-even situation, said an IFPC spokesman last month, but they could easily be pushed back into the red.

Iceland's economy continues to be precariously supported by a single major industry.

The nation, accustomed to a very high standard of living, makes enormous demands on it while appearing to be blind to its vulnerabilities.

Devaluation follows devaluation in a seemingly endless succession.

And inflation, running at between 50 and 60 per cent, is causing real problems.

The future strategy of the new fisheries minister, Kjarni Johannsson, a Social Democratic and a technocrat, is still something of a mystery.

Industrial unrest continues. The seamen's union has lodged demands for pay increases up to 30 per cent to bring them into line with general workers.

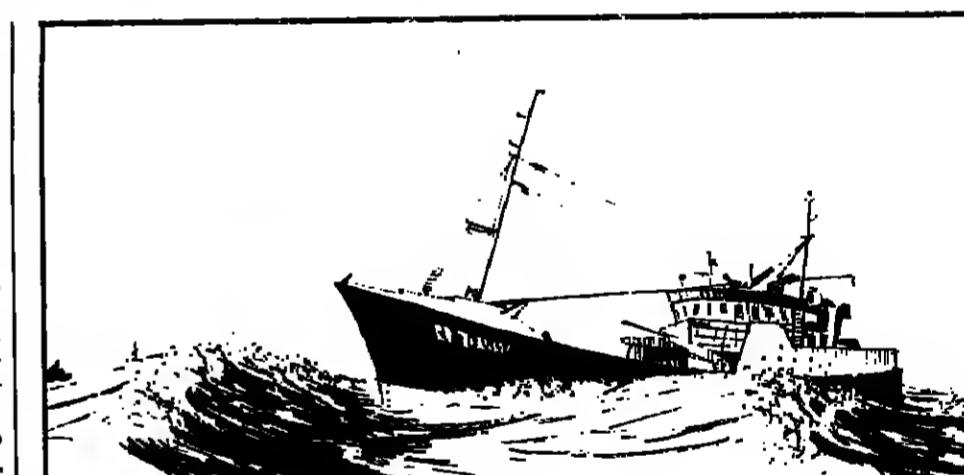
Pressure on vessel owners is likely to force up quayside prices, which are fixed by committee in Iceland, to a level where the freezing plants could once more fall into debt.

In a few years, Iceland has secured her fish stocks from foreign exploitation and she has established secure markets around the world for upgraded fish and fish products.

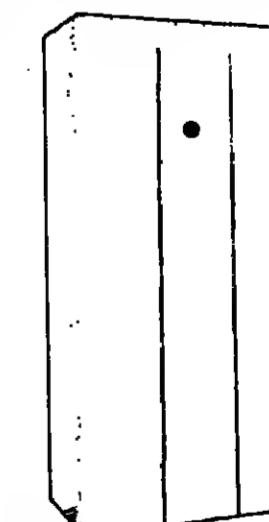
It remains to be seen whether she can so easily solve those of her problems that arise from within.



Weighing and boxing at sea. All fish is stored in this way aboard Icelandic stern trawlers.



## Make your own ice and freeze one cost of fishing



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## Foot in the door at Reykjavik

**BMEC**  
fisheries  
forum

THE FIRST ever co-ordinated attack by a group of British marine equipment manufacturers on the Icelandic fishing market was staged at a Reykjavik hotel last month.

Nineteen firms took part in a Mini Exhibition organised by the Fishing Division of the British Marine Equipment Council (BMEC), and supported by the British Overseas Trade Board.

They presented a wide range of products from lifejackets to propulsion systems, marine radar and refrigeration equipment.

*Fishing News International* was there too, along with sister papers *Fishing News* and *Fish Farming International*.

The only boatbuilder to attend was Campbeltown Shipyard which had been invited as a non-member of BMEC.

### Special interest

The Scottish yard has a special interest in the Icelandic market, having only recently sold four of its new 87 ft. compact stern trawlers to Faroese owners.

In addition to taking stand space, 11 firms gave papers at a technical Fishing Forum which ran concurrently with the show.

About 300 representatives from the Icelandic fishing industry attended.

They included shipbuilders, vessel owners, fishermen, and personnel from the freezing

plants, marine institute and fisheries ministry.

But for many of the British who travelled to Reykjavik, the exhibition will be remembered not so much for its immediate results as for its providing a unique and valuable opportunity to get a foot in the door of a totally new market.

Speaking at the opening ceremony at the Hotel Loftleidir, Mr. Jon Arnalds, Secretary General for the Minister of Fisheries, said that "past disputes have sometimes overshadowed co-operation; but this is over forever".

With memories of the Cod War fading, Iceland could be looking, then too, along with sister papers *Fishing News* and *Fish Farming International*.

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Inside the mini exhibition at Reykjavik.

**NEXT MONTH:** report on a big, new freezing plant

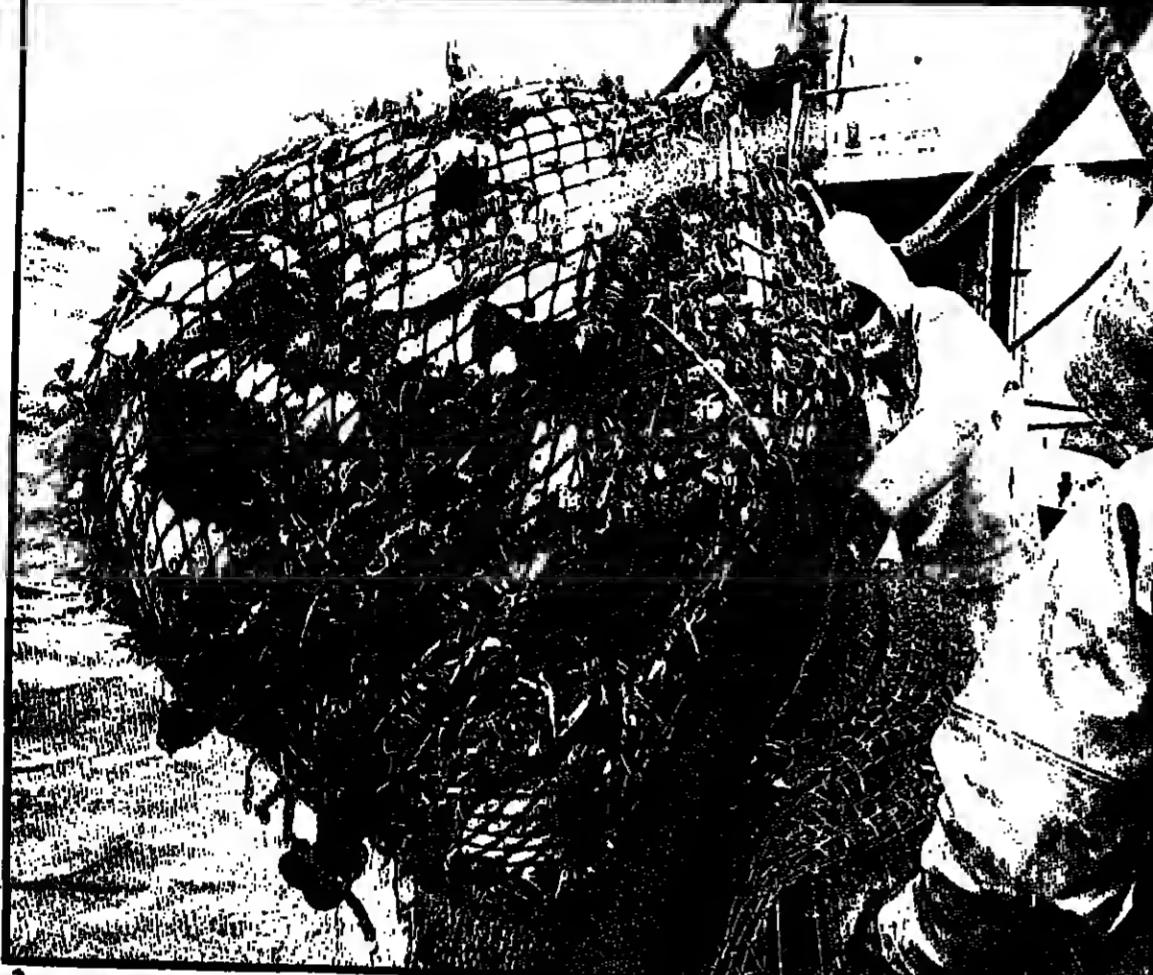
Now you can make your own ice with a Seafarer sea water ice making machine. Sea water ice costs less because you make it as you need it, when you need it. So you'll never have to return to port just for the lack of ice. When you do return, your catch could command better prices because Seafarer sea water ice keeps your catch, colder, fresher, odourless and brighter in colour.

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# ICELAND IN FOCUS



1. A net catch is brought in. The crew will sort the lobster from the cod.

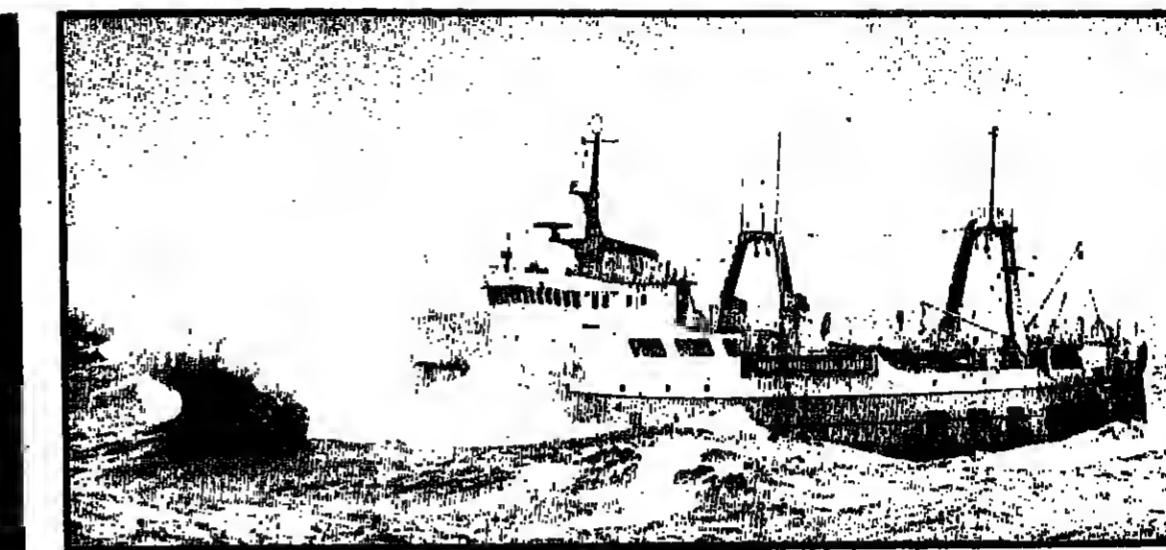
2. Gutting fish below decks. To make cod.

3. An Icelandic trawler pushes her way through heavy seas. There are about 100,000 fishing boats in Iceland.



Iceland's fishing industry provides 74 per cent of all exportable exports and provides employment for around 5,000 at sea and 10,000 ashore.

1. A net catch is brought in. The crew will sort the lobster from the cod.
2. Gutting fish below decks. To make cod.
3. An Icelandic trawler pushes her way through heavy seas. There are about 100,000 fishing boats in Iceland.



4. Ashore, and a catch is passed through a Baader nobbing machine.

5. Cartoning frozen blocks down in the freezing room.

6. Girls prepare Icelandic lobster, or nephrops. Only the tails are eaten.

7. Quality is vital. This girl may lose bonus if her trimmed fillets are below standard.



**PICTURES: Icelandic Freezing Plants Corporation**

The camera turns on aspects of the fishing industry and on some of the many people who live by it

## A breakthrough in video processing

-now gives brighter, clearer echoes on a clutter-free screen.

With ordinary radar there are six fundamental problems that can hinder the interpretation of a radar picture - **Sea clutter**, which can best be dealt with by manual adjustment of the sea clutter controls; **Rain clutter**, dealt with by manual adjustment of 'rain' and 'sea clutter' and 'gain' controls. (These controls require constant skilled adjustment, sometimes over long periods, and provide at best a compromise solution.) **Radar Interference** from other ships and receiver noise from own ship also worsen the picture. Weak echoes are hard to pick out and small echoes even harder to see at long range.

But now Decca CLEARSCAN radar solves these problems with unrivalled picture clarity.

**Sea clutter** is suppressed by automatic adaptive control of the Sea Clutter Control.

The rain clutter is suppressed by automatic adaptive control of both the rain and sea clutter controls, and gain level.

Radar Interference is suppressed by automatic circuits.

Recalvar noise automatically removed.

Weak echoes automatically raised to full brilliance by digital video...

...and echoes 'stretched' automatically on longer ranges.

For the radar efficient ship.

**...improving the best marine radar in the world.**



- Suppresses sea and rain clutter
- Suppresses noise and interference
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- Makes echoes longer

All these improvements can now be had with the unrivalled DECCA Solid State 9, 12 and 16 in relative and true motion displays and the famous AC display system, on both 3 and 10cm wavelengths.

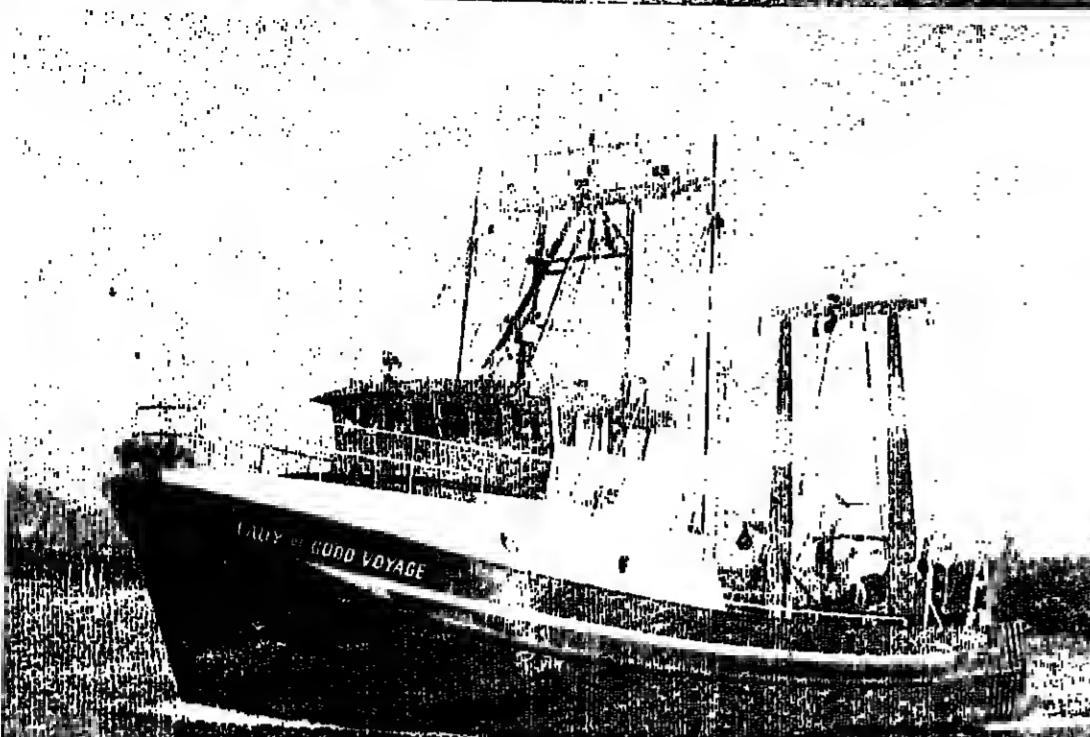
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CLEARSCAN  
RADAR**



Decca Radar Limited, Decca House, Albert Embankment, London SE1 Tel: 01-735 8111

## BOATS & BUILDERS

another vessel designed for 200-mile limits



The 28-metre long "Lady of Good Voyage" for skipper Barry Fisher. She is the first of a series of vessels bringing some entirely new features to the US west coast fleet.

# American 'Lady' feeds hake to Soviet ship

AN INTERESTING new design of compact fishing vessel was introduced into the United States west coast fishing industry in September.

She is the 26 metre (86 ft) long "Lady of Good Voyage", a double gantry trawler designed by Jack Wilsky who heads Mid-Coast Marine Inc., the Coos Bay, Oregon, yard which built the boat.

As significant perhaps as her design is the fact that the new boat is skippered by Captain R. Barry Fisher, who is also a member and manager of the owning company, Seawest Fisheries Ltd.

Captain Fisher has been tireless in his attempts to find ways in which US fishermen on the west coast can make the best possible use of the opportunities opened up by the 200-mile limit.

One way of obtaining better prices for fish not in great demand in the United States will be to sell it direct to factory ships of countries where it is in demand.

The "Lady of Good Voyage" is enlisting links and supplying it to a Russian factory vessel that is under contract to Marine Resources Company, a USSR/USA joint venture.

### Broad beam

Features include a broad 26 ft (7.22 metre) beam and a shallow hull.

Power is provided by KT 1150 Cummins diesels through Twin Disc 514 gear. Six-ft (1.8m) propeller shafts are all that are required due to the engine being placed far aft beneath the stern gantry.

To maintain a near level shaft alignment, the main power units are housed partly in pods that extend below the plate line where the bottom begins to sweep upward.

Auxiliary power for electricity and for pumps for the extensive hydraulic circuits is provided by two Cummins diesel-electric units, a model NT 335 and a V 504, each with pumps mounted on power take-offs.

The trawl is handled by Marco-WT 202 trawl winches. The net is retrieved by the main forward drum or by the

auxiliary drum, located over the ramp, that acts as a back-up system as well as a place to carry a spare net.

The eight-ft wide (2.4 m) net which reels have six-ft (1.8 m) diameter, reinforced flanges and an 11-in (28 cm) hub.

Winch controls for the fishing operations, including the two Gearmatic spin winches located on the uprights of the forward gantry, are all in the wheelhouse. The boat can be worked by the skipper and a crew of three.

### Optimum size

The fish hold spans the full beneath the work deck area and has a capacity for 500,000 lb of fish.

Like most features of the vessel, the overall size was chosen as the optimum for capacity, crew size, seamanship and investment. The close proximity of US fish resources means that efficient harvesting can be done in compact vessels.

The trawlers are constructed using a modular technique that permits prefabrication about the yard.

Only the bow section is built in place directly to the primary lay of the keel.

The stern section — the portion aft of the fish hold — is built in an inverted position behind the keel.

This section is the main engine room. After fabrication, it is rolled forward into an upright position and attached to the bow section by two wing modules that are fuel tanks which form the outside of the vessel and the side wall of the fish hold.

### Instant hull

Once ready, these four basic units are assembled into what appears to be an instant hull, all in a single day.

The gantries and the engine units are the other main sub-assemblies.

Six vessels are already scheduled for the series of which the "Lady of Good Voyage" is the first.

The second is already well under construction, and the fifth and sixth are for the same Seawest Fisheries ownership.



**The skipper — a leading light in US west coast fisheries...**



Barry Fisher, skipper of the "Lady of Good Voyage," is as active ashore as he is at sea in promoting the interests of US west coast fishermen. He is seen here during a seminar at the 1977 US Fish Expo in Seattle.

## Fishery research Simrad has the "resources"



Simrad hydroacoustic equipment in the instrument room of a modern research vessel

Management of fisheries require reliable knowledge of fish resources for effective control and regulation of their exploitation. Simrad hydroacoustic research instruments provide the most rapid and convenient way of collecting reliable data for estimating fish stocks. The search for new, unexploited fish stocks in deeper waters also calls for the best possible fish detection equipment.

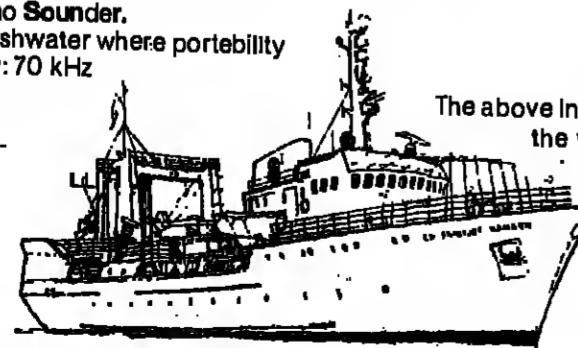
Since 1959 Simrad has produced hydroacoustic instruments especially developed for fishery research and the company's long experience in this particular field has led to today's range of highly sophisticated equipment for the monitoring of fish stocks all over the world, in all types of water from lakes to oceans.

**EK-S Scientific Echo Sounder.**  
The basic unit in the hydroacoustic instrumentation system. Working frequencies: 12, 18, 38, 49, 120 kHz

**EY-M Portable Scientific Echo Sounder.**  
Mainly intended for use in freshwater where portability is a must. Working frequency: 70 kHz

**QM Echo Integrator**  
For the quantitative measurement of echo signals.

**TE Additional High Power Transmitter**



The above instruments, in combination with the wide range of Simrad standard fishfinding equipment, fill the need for hydroacoustic instruments on modern fishery research vessels.

For more information about the Simrad hydroacoustic instruments for fishery research, please write to:

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es Horten  
P.O. Box 111  
N-3191 HORTEN, Norway

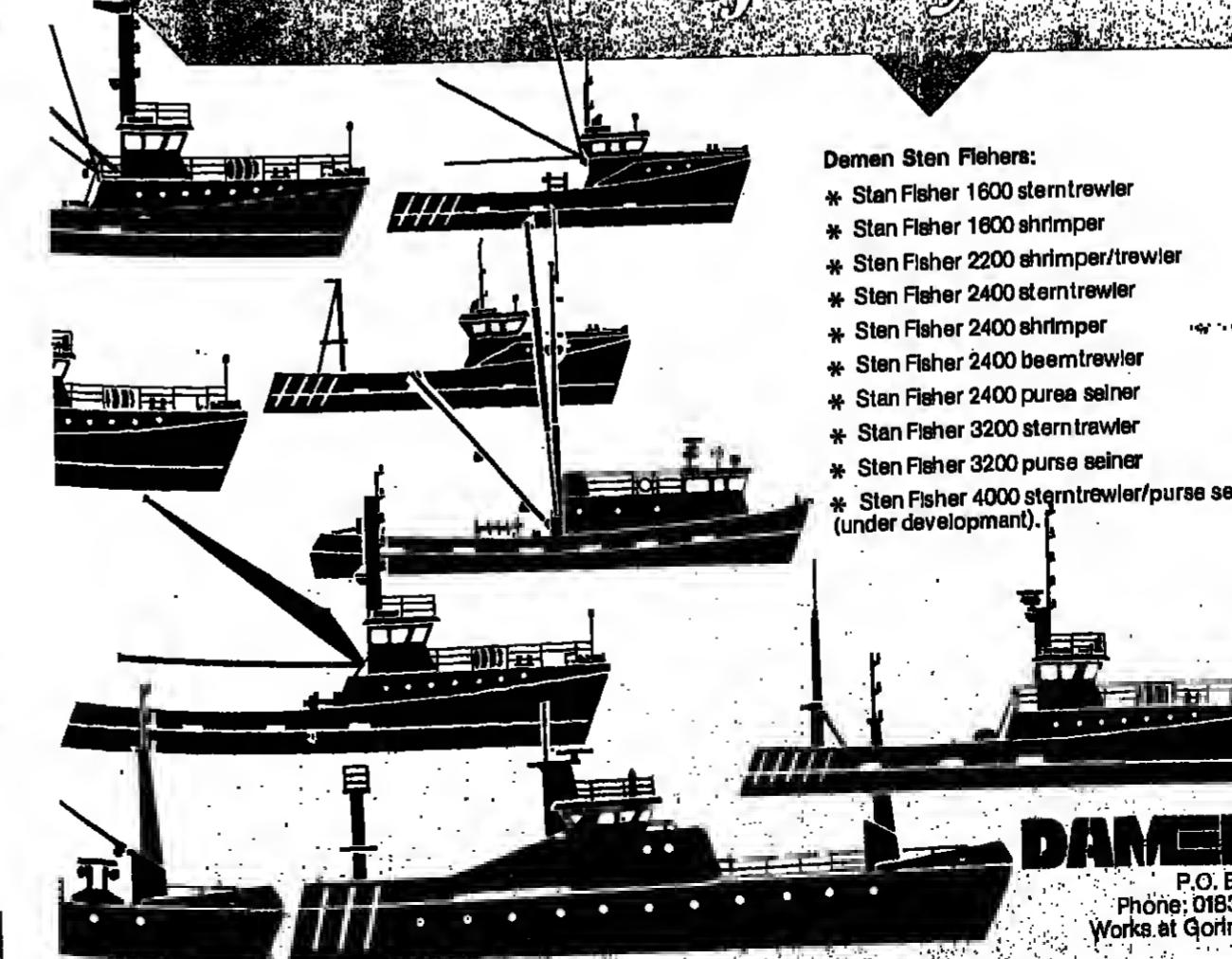
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- \* Stan Fisher 2400 stern trawler
- \* Stan Fisher 2400 shrimp
- \* Stan Fisher 2400 beam trawler
- \* Stan Fisher 2400 purse seiner
- \* Stan Fisher 3200 stern trawler
- \* Stan Fisher 3200 purse seiner
- \* Stan Fisher 4000 stern trawler/purse seiner (under development)

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World wide 'from stock'-delivery of spare parts for all your Damen vessels.

### Damen Field Service

Qualified service engineers for commissioning of ships, check-ups, general maintenance, rebuilding and repairs on the spot.

### Damen Crew Service

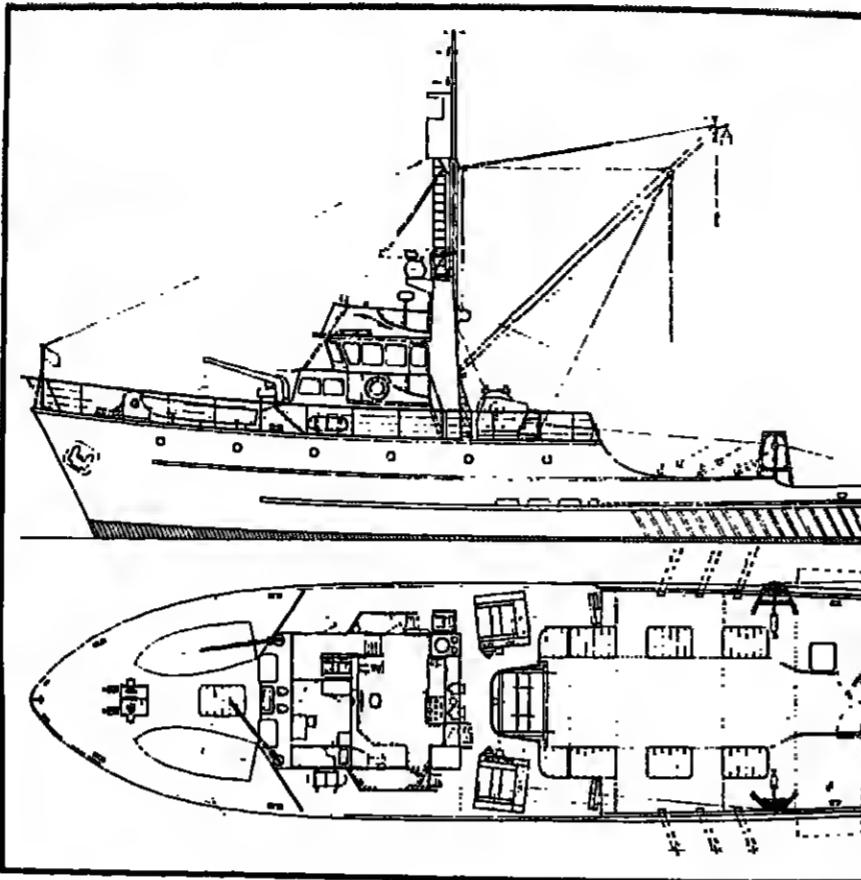
Capable crew can be obtained via the Damen Crew Service to carry out any nautical operation.

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## BOATS & BUILDERS

# AUSTRALIA'S 'DUAL PURPOSE FISHING MACHINE'



Profile and plan of the new 28 metre vessel. Shai is designed by Bodan & Associates in Sydney, Australia.

WITH THE extension of Australian fishing limits out to 200 miles, enterprising boatowners and fishermen may be looking to new designs of compact vessels. As in the United States over the past few years, the economic zone could be a boon to builders, to fishermen, and to designers who come up with the right type of vessel.

One promising steel boat is now being built by Fami Fabrications at Port Kembla. She is a combination stern trawler and tuna pole boat and is described as a vessel of advanced design "intended to provide her owners with a completely dual purpose fishing machine."

Tuna live bait polling in the season will be the prime function of the boat; her second function will be bottom and mid-water trawling. Both functions received the fullest consideration of the designers, Cecil E. Boden and Associates.

### Hull dimensions

The boat is 27.8 metres long overall and 23.9 metres b.p., with a breadth of 7.6 m and working draught at stern of 3.25 m.

The fish holds, aft of the engine room, consist of four pairs of insulated compartments port and starboard of a central tunnel. Total capacity of these spaces is 118 cubic metres with a total load of brine and fish of 120 tons.

All the compartments are fitted with

### Compact trawler-tuna pole fisher could cash-in on 200-mile boom

refrigerating coils operated by two Freon R.12 compressors of 15-ton refrigeration capacity, each driven by a 30hp, 415-volt motor. Tuna preservation will be by brine spray in all tanks to -1°C. Fish may be stored in tanks either dry or packed in ice.

When the boat is fishing for tuna, the compartments may be used initially for live bait.

For tuna, six Autopole hydraulic polling machines will supplement the work of the crew. An overboard spray system is installed around the bulwarks aft to excite the tuna.

When trawling, a twin motor net drum at the forward end of the aft fishing deck will be worked in conjunction with the split warp which is mounted port and starboard on the superstructure deck.

Each variable speed warp winch will have a

pull of 3.35 tons full drum and 10.87 tons empty drum with a mean pull of 5.08 tons. The winches are of dual speed capacity. The net drum has a two metre flange diameter and a barrel length of two metres with a pull of three tons on the top layer and 11.5 tons on the bottom layer.

### Trawl gallows

A pair of hydraulically controlled gallows for the warp blocks are arranged port and starboard about 3.5 m from the stern. These can be removed if desired when the boat is tuna polling.

In comfortable accommodation is provided,

with skipper's cabin and four 2-berth cabins for the crew.

In the wheelhouse navigation instruments and fish finders are arranged in a compact console.

For fish finding, the boat will carry Koden SRM 673 sonar, Simrad EQ echo sounder with MC scale expander, and Skipper 603.

Navigation equipment will include Decca radar, Magnavox 1112 Satellite Navigator, and Standard NL doppler speed log.

The main engine will be a Mirrlees Blackstone FS1.8M turbocharged diesel rated at 1220 hp at 1000 rpm and turning a controllable pitch propeller (in steering nozzle) through a Relmex reduction gearbox.

extension of the sides of the superstructure to within a third of the boat's length from the stern. From this point, the bulkhead extends at normal height to within about three metres from the

superstructure deck.

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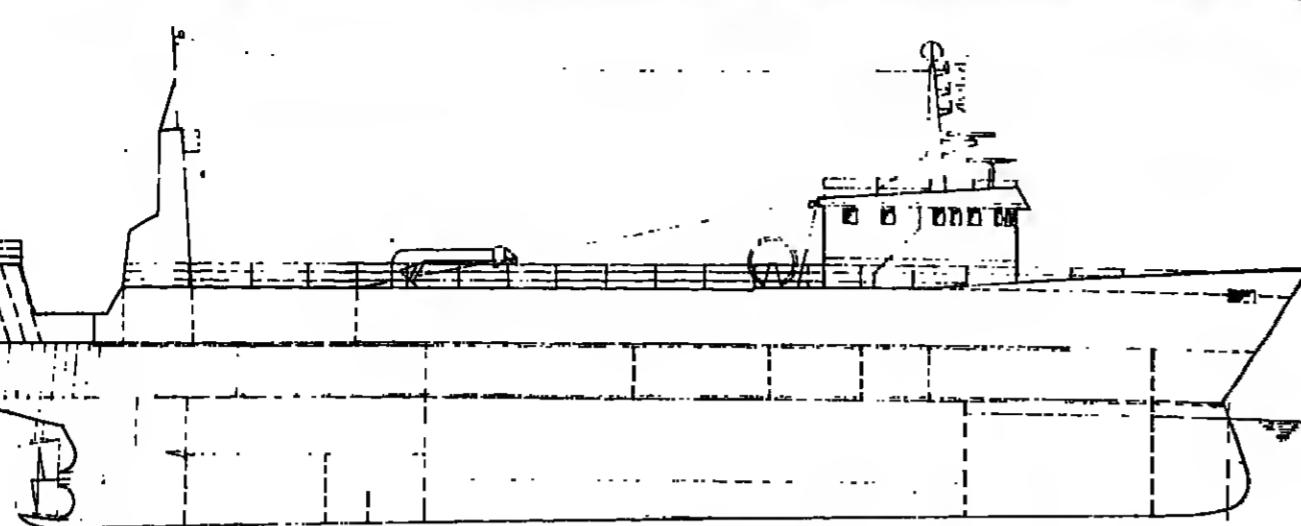
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## BOATS & BUILDERS

MAIN DIMENSIONS	
length oa	57.0m
length bp	50.15m
breadth	10.30m
depth to upper deck	7.30m
depth to main deck	5.00m

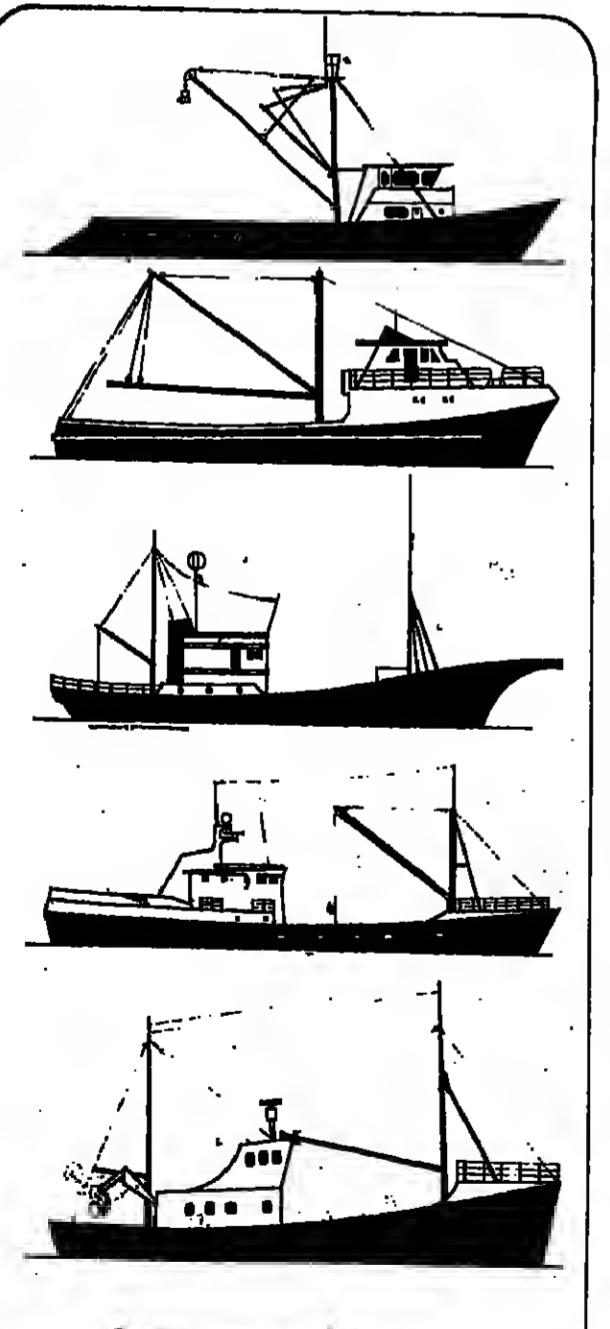


# Small yard's big step

PHOTO BY G. H. COOPER

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**But Icelandic builder may need a buyer for largest trawler yet**

THE Icelandic shipyard, Stalvik HF, has laid the keel of a 57 metre (187 ft) stern trawler for the home fleet.

This is a major step for the yard, which in the past seventeen years has built 25 inshore vessels up to 25 metres long, all for Icelandic owners.

The latest trawler has a beam of 10.3 metres (34 ft) and loaded draught of 7.3 metres (24 ft).

Design features include a full-length shelter deck, and insulated fisherman capacity of 660 cu m.

A Finsam ice plant will provide up to ten tons a day. Propulsion will be by a 2,200 hp West German MAK engine.

### Confident

Stalvik engineer Steinar Viggoson told *Fishing News International* that the sale of the trawler has yet to be confirmed. But, if the present deal falls through, the yard is confident that it will find a buyer and that the vessel will be in the water within eight months of signing.

# BALSA CORE SPACE SAVVIR

## Modified 35-footer—45-footer to follow

VERSATILITY WORKBOATS of Rye in England, have brought out an improved version of their 35 foot (10.7 metre) hull which incorporates a balsa core construction.

The first boat to be completed to this specification was exhibited at the Southampton Boat Show in September.

The 35-footer has a heavy displacement hull with beam of 13 ft 6 in and a draft of 5 ft. This gives a normal displacement of 17 tons.

The hull is laid up in a mould in the normal way, but instead of the internal framing, a layer of resin impregnated end-grain balsa is applied down to the turn of the bilge.

Further laminate is laid up over this core and the result is a very rigid structure.

Absence of internal framing gives more useable space inside the hull and makes for much easier cleaning of spaces such as the engine-room and the fish hold.

The bulkheads in the new hull are constructed from GRP foam sandwich.

The prototype boat is fitted with a Ford Sabre 120 hp diesel motor to a P.R.M. gearbox of 3:1 reduction.

There is a small cabin forward with two berths and cooking facilities are provided in the large wheelhouse.

Alternative sizes of wheelhouse are available to meet different requirements.

### Larger boat

Following the development of the 35 ft balsa cored hull, Versatility Workboats are now developing a 43 ft (13.1 metre) boat using the same type of construction.

The new design is for a heavy displacement vessel with an overall length of 43 ft 4 in and beam of 18 ft 6 in.

While it has been developed as an aft wheelhouse vessel, forward wheelhouse versions will be available.

## 'Provider' steel hulls go fishing

BRITISH builder "Colonial Craft Cumbria" has developed a commercial fishing version of its *Provider* 7 all-steel hull.

With a length overall of 7.45 metres (24.5 ft), the boat has a breadth of 2.84 m (9.3 ft) and a maximum draft aft of 0.8 m (3 ft).

The hull is of all-welded double chine construction.

### Girders

It is supplied ready for fitting out and the engine girders may be tailored to suit the owner's choice of engine.

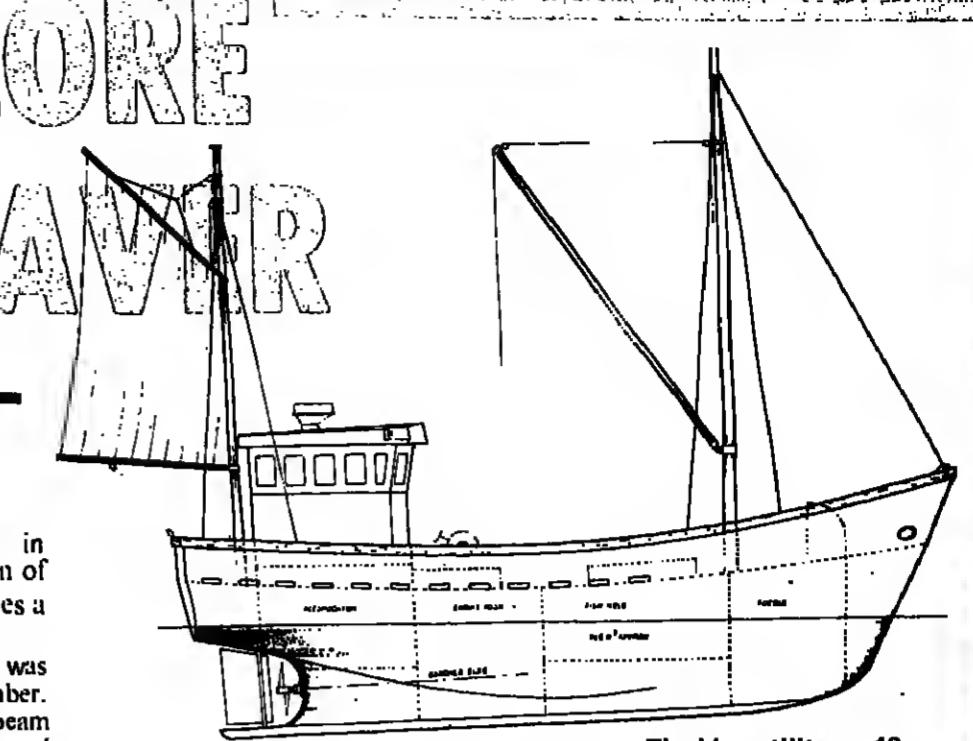
A speed of six to seven knots can be achieved, depending on the installed horsepower and propeller.

Space is provided forward for two bunks, w.c., wash-basin and cooker.

According to Colonial Craft the design was prepared after considerable research into the inshore fishing market.

The company says that the size range will soon be increased by a nine metre (29.5 ft) and an eleven metre (36 ft) hull.

First deliveries of the *Provider* 7 took place in October-November. Construction time is about five weeks.



The Versatility — 43.

## SURVEY LAUNCH DUE SOON

THE Chantiers de la Perrière yard is building a fishing site surveillance launch for the Fishery Department of the French Maritime Administration.

Due to be delivered by the end of 1978, the launch is 49 metres long overall, has a moulded breadth of 7.5 m, and depth amidships of 4.7 m.

She will be propelled by two SACM diesel engines, each developing 2,100 hp at 1,560 rpm. Estimated speed at 270 tons displacement will be 19 knots.



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## SHRIMPER ORDER



THE 12 shrimp trawlers to be built in Spain for the Soviet Union (See *FNI*, September 1978), will be slightly different from the prototype vessel shown at the Inrybprom exhibition in Leningrad in 1975.

Each vessel will be 28 metres long and will have two decks. It is not known where the Soviet fishing industry will use them.

The trawlers are to be built by Construcciones Navales del Sureste SA in Alicante. The contract will require some reorganisation and expansion of the yard, which probably employs about 120 people.

The picture shows a tug under construction at the Alcante yard.

The company says that the size range will soon be increased by a nine metre (29.5 ft) and an eleven metre (36 ft) hull.

Work is also to proceed on a project to build fishing ships for Nigeria. The order is for six ships on credit terms over seven years.

It is for two factory ships, two trawlers and two purse seiners which will be built by yards associated in the Western Norway Shipbuilders Association — Langsten Slip, Karmund-MV Elde & Sons and Sovkact.

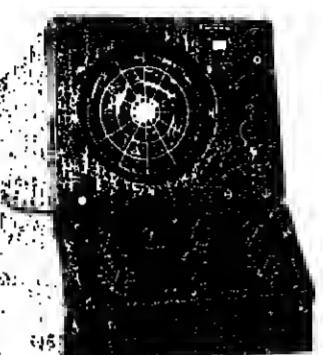
Countries world-wide are taking part in joint

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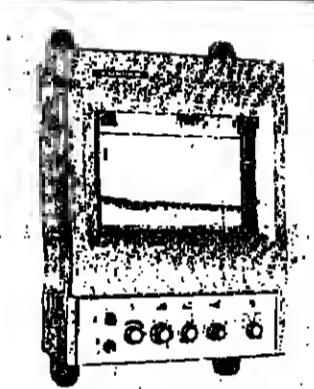
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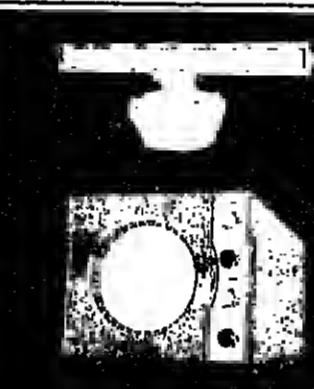
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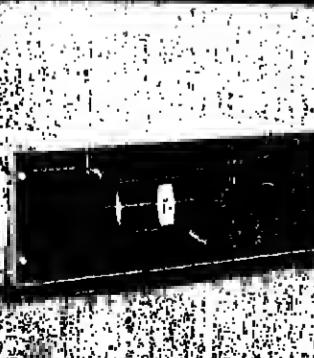
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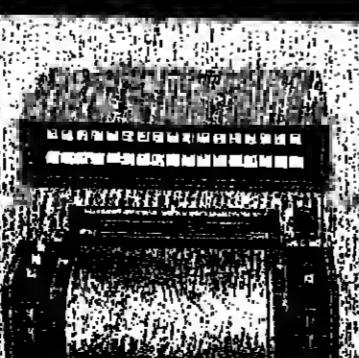
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MARINE RADAR FRS-4B

25W input power. 100W output with built-in pulse length operation. High sensitivity logarithmic amplifier. 1.5 to 10 miles.

## NZ and America in link to catch skipjack

OPTIONS for the development of New Zealand's fish resources within her 200-mile economic zone should start from the premise that the local industry should harvest, process and export as great a proportion of the total resource as is short a time as economically possible.

But co-operation with foreign fishing interests was accepted by New Zealand's Fishing Industry Board, in discussion with government departments, as one way of developing resources "which would be difficult, risky or impossible for the NZ industry to develop on its own."

### Committee

In its report for the year ended March 31, 1978, the Board notes that the government set up a committee to consider all joint venture proposals where foreign participation exceeded 24.9 per cent. The Board argues that as a statutory body, it should be represented on this committee.

One joint venture company already operating is the New Zealand Pelagic Co. (1976) Ltd. This involves NZ and United States interests.

It had a successful season entangling 7,000 tons of skipjack with its charter vessels. New Zealand vessels, including the *Finisterre*, caught 3,136 tons.

While it supports the venture in principle, the Board is concerned that charter vessels have been allowed some rights to fish inside 12 miles in the Bay of Plenty area.

"The practical feasibility has been established," says the Board in its report, "but there remains matters such as high freight costs, and import duties and quotas on squid in the Japanese market, which will need to be resolved before the full economic feasibility of such an exercise is clearly established."

Also noted by the Board is the British fishing mission which visited New Zealand briefly in February, 1977.

But the Board adds that "it was generally accepted that this group was neither well enough briefed nor did it spend sufficient time in New Zealand to enable its report to be particularly meaningful."

ventures...but there are problems—

# NOT

CANADIAN government concern that its west coast fishing industry is drifting into Japanese control has been confirmed by a special fisheries department report. This says that increasing Japanese investment could seriously impede Canadian control over the \$360 million a year British Columbia fishing industry. The report's author, Trevor Proverbs, says the Japanese are known to have invested almost \$20 million in B.C. processing firms during the last five years and an untraceable amount could possibly double this.

Already 12 of 60 west coast processing

companies are partly or wholly owned by Japanese interests.

The report says Marubeni Corporation has bought up \$12 million of debentures put out by B.C. companies.

For more than a year, the Pacific division of the fisheries department has been warning of increasing Japanese control but Ottawa has not take any action despite Fisheries Minister Romeo LeBlanc's vow that foreigners should not be allowed to take over.

Mr. LeBlanc likes to say that the 200-mile limit was implemented to get the foreigners out of the Canadian fishery and it doesn't make sense to turn around and let them in the back

door by buying into Canadian companies. This policy guided his opposition to a proposal by Nordsee of West Germany to buy a controlling interest in a Newfoundland fish plant.

### No panic

However, Jerry Spitz, president of the Fisheries Association of B.C., said the increasing Japanese investments shouldn't be viewed as "a panic situation."

The investments are attempts to insure adequate fish supplies for Japan which has lost many of her traditional overseas fishing

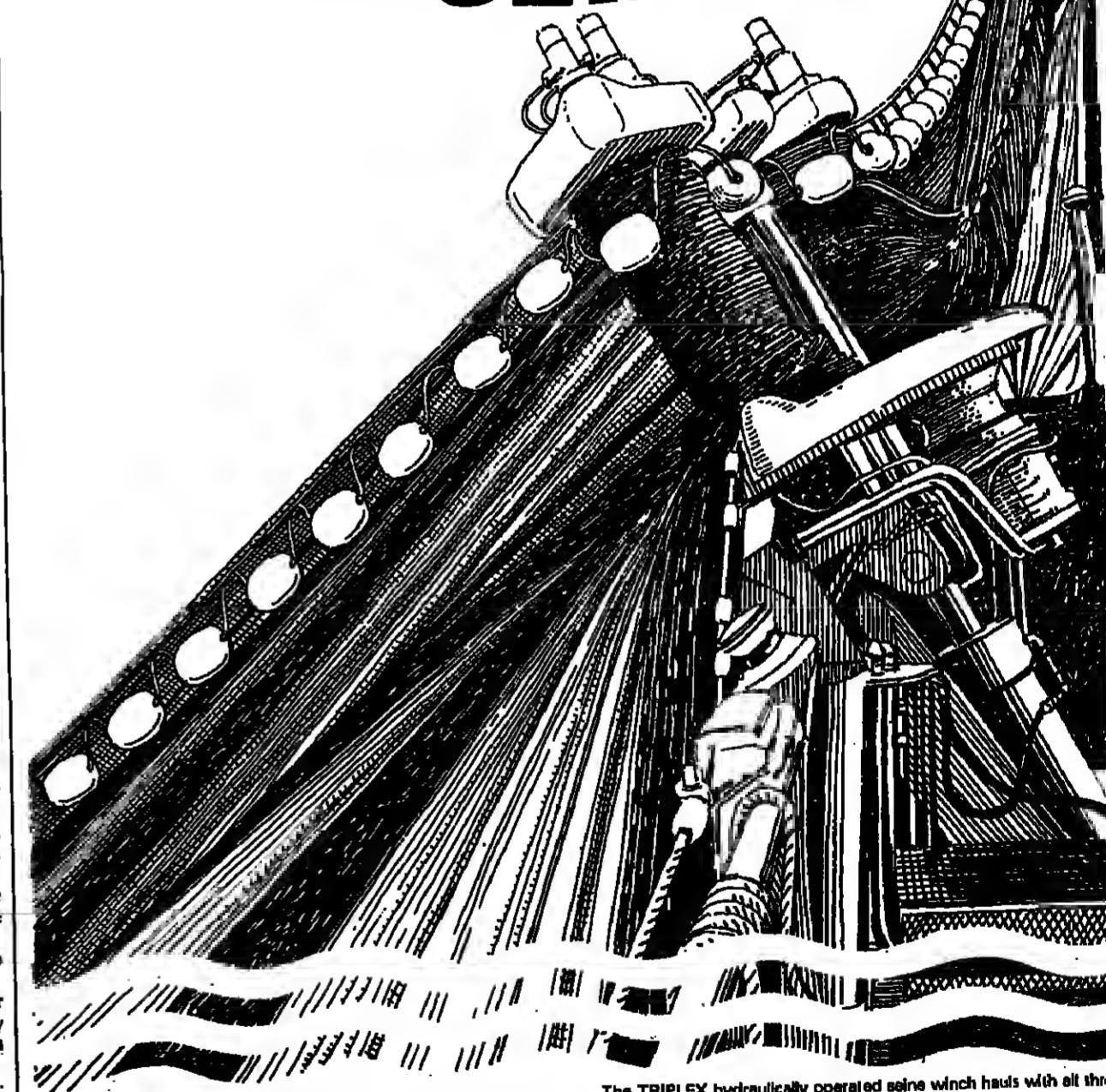
grounds through 200-mile limits.

But Trevor Proverbs says the Japanese are offering various incentives to the Canadians, such as equity investments and debentures to guarantee fish supplies.

Exports of fish and seafood from B.C. to Japan have climbed from \$25 million in 1974 to \$109 million in 1977.

The processing sector is over expanded in B.C. and further expansion could squeeze established businesses. The Japanese could capture a guaranteed supply of fish for their domestic market using their vast financial reservoir meaning Canada would have lost control over the resource.

## PURSE SEINING



### And in Argentina...

JAPAN is interested in expanding her collaboration with Argentina in exploiting fishing and marine resources south of the 40th parallel in Argentine waters, according to Senko Suzuki, a member of the Japanese Chamber of Deputies and ex-Minister of Agriculture in Japan.

He headed a fishing mission composed of private Japanese businessmen who visited Argentina recently.

The mission participants explored possibilities to increase cooperation in the fishing industry.

Earlier this year, Japan and West Germany were awarded one-year contracts for experimental fishing research and exploitation in Southern Argentine waters.

A Japanese research ship, the *Shinkai Maru*, has been conducting feasibility studies in the area since April 10 and, according to Suzuki, has produced "promising results."

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## PORTS & MARKETS

### Fishermen find direct buyers

BULGARIAN and Swedish buyers are to take more than 30,000 tons of squid and mackerel directly from Newfoundland fishermen.

Bulgaria has contracted to buy 1,500 tons of squid and 10,000 tons of mackerel. The Swedish fish trading concern is reported to be buying 10,000 tons each.

These deals have annoyed Canadian processors, but they have delighted Newfoundland's inshore fishermen.

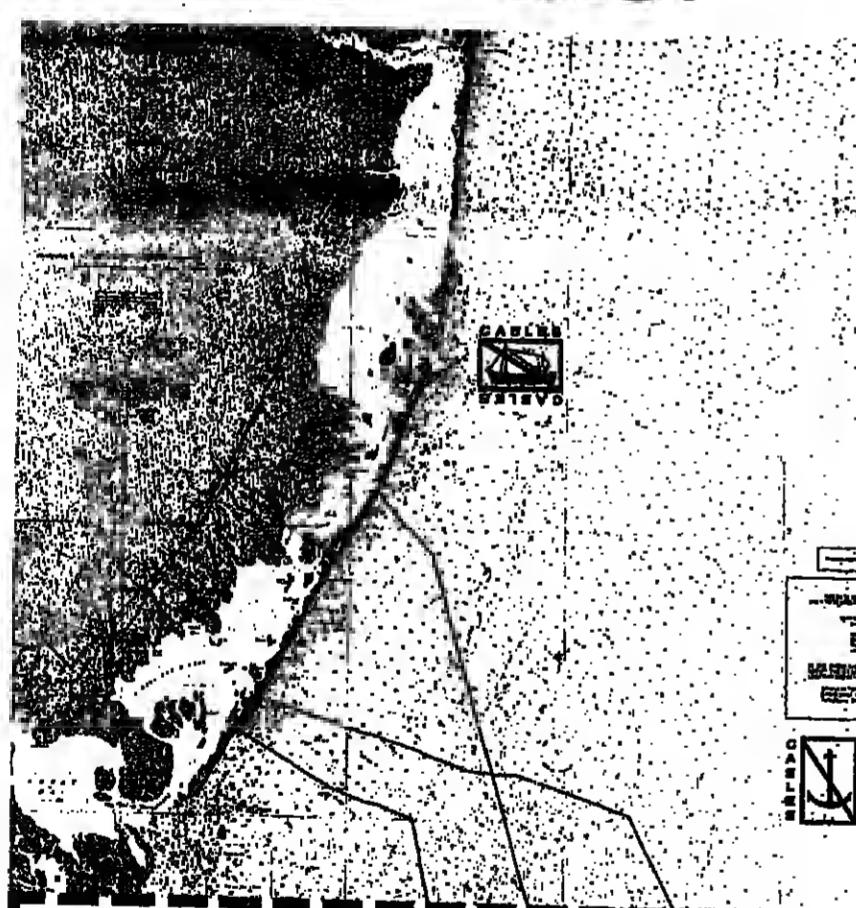
Richard Cashia, president of the Newfoundland Fishermen, Food and Allied Workers Union, one of the driving forces behind the sale, said the squid and the mackerel are surplus to plant capacity in the province.

The Union has also attempted to work with the local companies in setting up another sales deal with Poland. Vessels from Poland already buy herrings direct from Bay of Fundy fishermen, and hake from British Columbian trawlers.

Plant operators fear that such arrangements may harm traditional markets for squid and mackerel. They allege that there has already been a fall-off in demand for squid from Japanese interests who may be buying from Bulgaria.

But the Bulgarian and Swedish deal has the blessing of Fisheries Minister Romeo Le Blanc who is pushing the industry to develop new markets for Canadian fish.

### Please don't cut the cable.



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# British farmed silver eels are flown to Europe

FISH FARMER Maurice Ingram on the north Somerset coast of England in October made his first break into the European Common Market when he had 300 kilos of live silver eels flown to Holland.

Eels were airfreighted from Bristol's Lulsgate Airport to Amsterdam. Twelve hours later, gutted and smoked, the eels were on sale in the city's restaurants.

Maurice is one of the pioneers of modern sea fish farming in England. Nine years ago, he began growing (he prefers the term growing) fish on a small site near Hinkley Point. A nuclear power station using the station's warm outfall water.

He has since farmed the company Marine Farms Ltd. with local Somerset businessmen and farms on a 1½ acre site leased from the Central Electricity Generating Board.

Equipped with eleven 22,000 gallon circular tanks, packing storage and office facilities, the warm water connection to the power station is beginning to pay off. There is even the possibility of expansion. The company is presently negotiating with the CECB for additional land.

The farm also rears young oysters for on-growing, but eels appear to offer the best prospects. Eels are readily available from local eel stations.

"The outfall water, which is between 15 and 30 deg. C warmer than the coastal sea water, depending on the time of year, is ideal for eels, which are the most practical fish we can find to grow in large quantities," said Maurice.

Ingram. "Top quality silver eels have a high fat content and are excellent for smoking."

He buys his elvers (each weighing about a third of a gram) by the kilo in April and May.

"By the time we sell them after 16 months, they weigh about 200 grams each," he said.

Eels are a high-priced and much desired food in several European countries. "It is an expanding market," added



A BREAK into the Common Market for eel grower Maurice Ingram. Twelve hours later these north Somerset-bred silver eels were gutted, smoked and on the tables in Amsterdam's restaurants.

Maurice, "and we are achieving what we hoped for."

He will be achieving even more when he sends a three-ton eel tanker shipment over to Holland in December.

Meanwhile, in Holland plants producing smoked eels have been experiencing difficulties obtaining supplies from the IJsselmeer, the expanse of water formerly called the Zuider Zee.

In the first half of 1978, supplies were just below 380 tons (worth the equivalent of US\$1.52 million). Indications are that total output from the IJsselmeer will be below the 1977 level of 783 tons. And, overall, Dutch supplies are below total demand.

Last year imports amounted to 4,700 tons.

### Tuna trends

MORTON Research Corporation has prepared a comprehensive business information report on the market for tuna in the United States.

Its contents include a "profile" of the tuna fish consumer, examinations of supermarket sales, brand preferences in four major US cities, world output trends for canned tuna, details of US imports, price and advertising trends.

The 66-page report finds that Americans are eating one-third more tuna than they did in the early 1960s but that the competitive position of the fish within the overall seafood economy has declined.

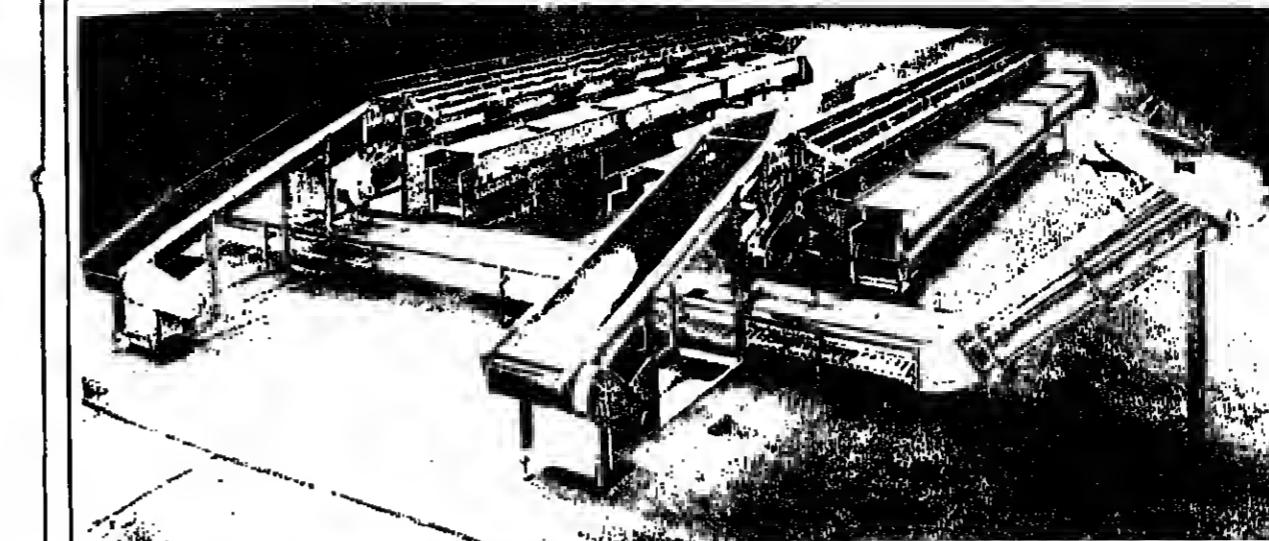
Morton has also published a 1978 Seafood Study (priced at \$35 a copy). Details of this and the Tuna Fish Market report (priced at \$95 can be obtained from Morton Research Corporation, 1745 Merrick Avenue, Merrick, New York 11566, USA).

### FLOWER KEEPS FISH FRESH...

GODOFRODO MONSOD, a researcher in the Philippines, is reported to be using a water hyacinth extract to keep fish fresh for more than a month without salt, ice, refrigeration or drying.

The Laboratory Division of the Bureau of Animal Husbandry has analysed the extract and found it to be non-toxic. Monsod is a 53-year-old researcher who finished high school but has been inside universities only on consultations or to make speeches about his work. But over the past five years he has obtained Philippine and US patents on ten processes and inventions.

He has been given international agency aid to set up the Hyacinth International Research Institute at Carabao, Quezon.



The 24-station Intel hand filleting line with linking offal conveyor as supplied to Joe Little Ltd. of Aberdeen.

# PHILIPPINES FISH BOOST

THE Philippines Fish Marketing Authority is now into its third year of operation. It was created in August 1976 to promote an efficient marketing system for the country's fishery industries.

For many years, the Philippines has been importing fish (mostly in cans) despite a yearly growth rate in production of about 5.5 per cent.

Experts blamed this inefficient marketing, pointing out that poor handling and distribution wasted much of the fish caught or farmed.

President Marcos therefore agreed to the formation of the Fish Marketing Authority, with development, promotion and information functions.

One of its responsibilities is the management of the big port and market at Navotas. Newly developed, Navotas is reported to have increased the fish supply by eliminating lime-wasting activities and diverting effort from those into producing fish.

It has improved quality by speeding up handling, has cut fishing costs through more efficient use of manpower, and it has stimulated investment in the industry.

In its information and promotion function, the Authority has been working to improve statistics of supplies, to spread news of technical innovations, and to keep people in the industry informed of prices, credit schemes, extension services and other useful data.

The Authority has launched a price monitoring system by which consumers are told by radio what species are available in the markets. It also runs a Fish Market News service which has enabled it to programme fish distribution, making excess supplies available in areas in need of them.

It has set up retail markets in a number of villages to encourage sales of fish direct from producers to consumers.

Recently, the Authority started an integrated marketing system to help small-scale fishermen. Under this system, excess catches are concentrated at a collection centre. From there, they are transported to Navotas market fast enough to keep down spoilage and to raise prices to the fishermen supplying into the centre.

### Corsica's own brand label

CORSICAN fishermen and retailers have teamed up to issue their own brand label — "Fish of Corsica."

The new label will guarantee quality, and applications to use it will only be granted if the authorities are satisfied that the required standards can be met.

engineers are developing a fish smoking business in their spare time.

Jorge Polack (the economist) and Federico Flores (the engineer) have set up a "cottage industry," Ceral SCRL, near Villa Beach.

"Our plant is small but the system works well," says Jorge Polack. "Our problem is

that the plant is limited for relatively high-priced quality products."

### Hand filleting line installed

INTEL ENGINEERS have supplied a new purpose-built filleting line to the Aberdeen fish merchant Joe Little Ltd., and have installed it in the company's Sinclair Road premises.

This is a hand-filleting line of stainless steel with synthetic, long-lasting cutting boards and low-cost fabrication using a semi-monocoque design.

Based on a standard four-station module with bolt-on feed and take-off end units, the line is flexible enough for the processor to start off in a small way and build it up as business expands. The four-station modules can be quickly supplied.

For the Joe Little premises, the new line (which replaced a 12-year-old unit) consists of two identical 12-station lines positioned side-by-side and linked by an offal conveyor.



Jorge Polack checks the smoking of mackerel and jack mackerel.

### THEY'RE SMOKING SMALL IN PERU

The partners presently process swordfish and Spanish mackerel (serra). But they are testing lower-priced horse mackerel and jack mackerel. Next on the list is smoked trout — up the luxury scale again.

Ceral produces 200 to 250 kilos of smoked fish a month, but it has capacity for three tons.

The kiln is built of white bricks lined on the inside with cement and is heated by a log fire to a temperature of 120 deg. C. Logs are usually algarrobo from northern Peru, which they have found to be the nearest to the oak used in Britain.

## GOOD NETS FOR GOOD CATCHES



This is one of our bagnets containing 220 tons of blue whiting from a 2-hour haul.

We make all kinds of fishing gear for sea-going fishing vessels from 50 h.p. to 3,000 h.p. We are particularly well-known for our deep-water shrimping trawl, and our midwater trawl for blue whiting.

We have supplied blue whiting equipment to:

"Gullfinur," Chr. I. Grolimund, "Jupiter," "Slundur Tolleson," and "Krunborg" of Faroe Islands. Also "Blami Olavsson" and "Grindvikingur" of Iceland, "Tind" of Sweden and "Isold" and "Ulla Bonde" of Denmark—all single-trawlers. We have also supplied other sets of gear for pair-trawling.

We have already taken many orders for 1979—when may we take you? Naturally, we also make trawl equipment for all other fisheries. Please ask for quotations.

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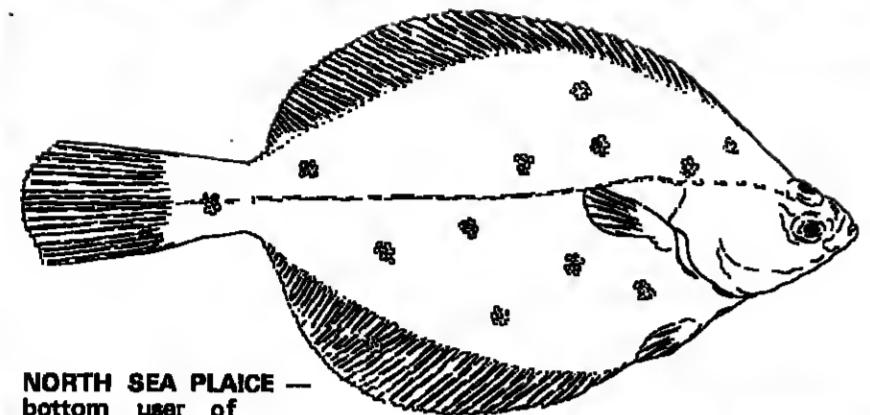
### COD AND MUSHROOM

LATEST product from Birds Eye Foods for the British market, is cod in mushroom sauce. This frozen fish producer claims to have three-fifths of the retail market for cod in sauces. Its cod in parsel sauce, launched in 1975, has grown to a turnover of over £3 million.

To launch its new product, Birds Eye promoted it with a £250,000 television campaign.

A 'transport' study that could help fishing

# TRAVEL BY TIDE



NORTH SEA PLAICE — bottom user of tidal transport.

RESEARCH work carried out by fishery scientists of the Lowestoft laboratory in England, shows that certain species of fish use what is called selective tidal stream transport to assist them in travelling about the ocean.

A fish will leave the bottom at slack water to move downstream in midwater on one tide and return to the bottom at the next slack with very little movement on the opposing tide.

This method of transport has already been suggested for the movement of elvers and shrimps, and one researcher has put forward the theory that soles use the technique on spawning migrations, joining the appropriate tide during night only.

According to Dr. Harden Jones and two colleagues, this could mean that, if selective tidal stream transport was kept up over several tidal cycles in the southern

North Sea, plaice would be enabled to move for substantial distances at quite good average ground speed, with lower costs in energy consumption.

According to Dr. Harden Jones, it is difficult to say whether there is any relation between the size of a fish and the distance covered during migration.

Conventional tagging experiments do not provide an answer, and the best that can be done is to look closely at the distribution of recoveries of tagged fish as soon as possible after release.

#### Travel slowly

Various experiments with both cod and plaice have established no connection between size and speed, and both tend to travel slowly, although "the fish have no overwhelming hydrodynamic problems."

There are in fact two species: one over the ground, and one through the water. There could well be several advantages in travelling fast over the ground, such as less risk during travelling time, but there is also one main attraction attached to travelling slowly through the water. If the power to be exerted against total drag is proportional to the square of the fish's velocity relative to water, an energy-conscious fish would therefore swim slowly.

In other words, as a fishing vessel uses less fuel steaming with the tide so a fish saves energy by using the same natural method of transportation, thus moving slowly through the water but rapidly over the ground.

#### Following fish

The Lowestoft researchers used a sector-scanning sonar to follow in the open sea. Individual fish fitted with special transponding acoustic tags, for periods of up to 55 hours and distances of as much as 60 km.

The ship was regularly positioned and water current measurements taken; the results suggesting that the fish were indeed "working the tides".

Assuming that the plaice behaved in this manner during migrations, the research workers reasoned that the fish should come off the bottom

**Robin Burton  
reports  
on a  
British  
project**

into midwater on south-flowing tides and return to the bottom on north-flowing tides. This theory was tested by fishing on the migration routes with midwater trawls on both northerly and southerly tides; it was found that almost four times as many fish were caught on a southerly tide than a northerly.

This should, of course, work in reverse with fish using northerly tides to return to the northerly feeding grounds.

One curious aspect was the heliophily of fish which suggested that they were keeping to some sort of flow line. The variations in which were caused by sandwaves.

A plaice has a given density, and will thus sink in water of a certain density. It has no hydrodynamic bladders so it has to use up a small percentage of its energy to stay in midwater.

It could be that the plaice observed were using tail generated by water flow over a wavy bottom? Could their shape, instead of being a means of living in demersal life, be regarded as a means of "swimming" in the ocean?

#### Same behaviour

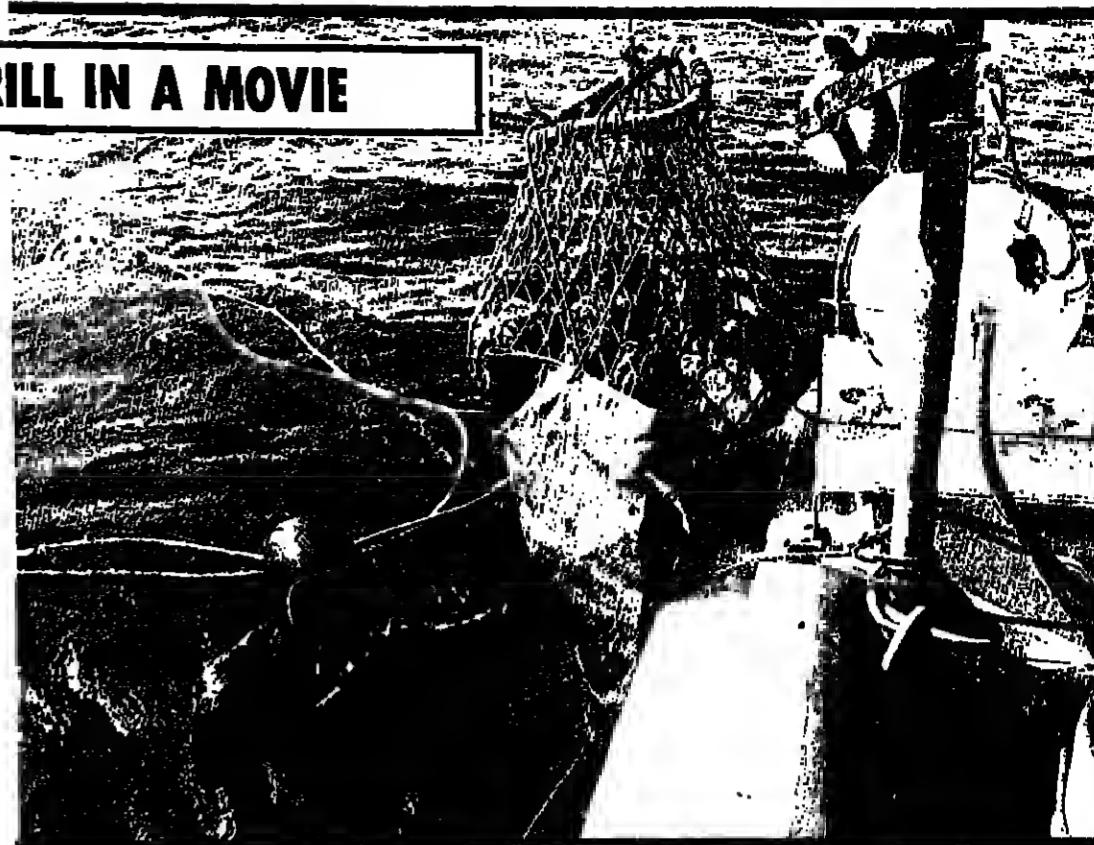
It would be interesting to know if cod behave in much the same manner as plaice. Do they also use selective tidal transport? Cod have swim-bladders and thus different problems connected with swimming at different levels in the ocean: "This must pose some problems to the cod with regards to diurnal vertical migrations..."

It may be true to assume, perhaps, that cod use the same system of tidal selection as plaice, if to a more limited degree, and Dr. Harden Jones says that "although it has already been suggested that fish swim in such a way as to reduce the power required, we would add that some fish may have gone one step further and that they behave in such a way as to reduce the requirement to swim."

Could it be that the movements of the fish, once charted, could become their downfall as fishing vessels are used to interrupt tidal transports? Certainly it would seem that trawls used on certain tides stand a better chance of securing a good haul than those used on others.

HERE, JAWS IS MORE THAN A THRILL IN A MOVIE

# Where the fisherman is in the cage!



AUSTRALIAN diver with a bag of abalone gathered on the seabed.

SOME OF the shark scenes in the film Jaws were shot off the coast of South Australia because the seas there are reputed to have the largest concentration of white pointers. This was the species that "starred" in the film.

But, while audiences the world over thrilled to the white pointer sequences, the real thing was haunting Australian abalone divers.

It says much for the possible earnings from successful abalone diving that a licence to harvest them in one state costs \$A26,000. Divers have been known to earn up to \$A2,000 a week. But shark attacks are a hazard of the industry.

Divers work from a rubber boat powered by a 75 to 100 hp outboard. Air is provided by a small compressor through about 100 metres of hose attached to a demand regulator.

Abalone are seldom found at depths below 35 metres. They are prised off the rocks by means of an iron bar. The catch is then placed in large bags which are hauled up by the diver's assistant.

#### Vulnerable

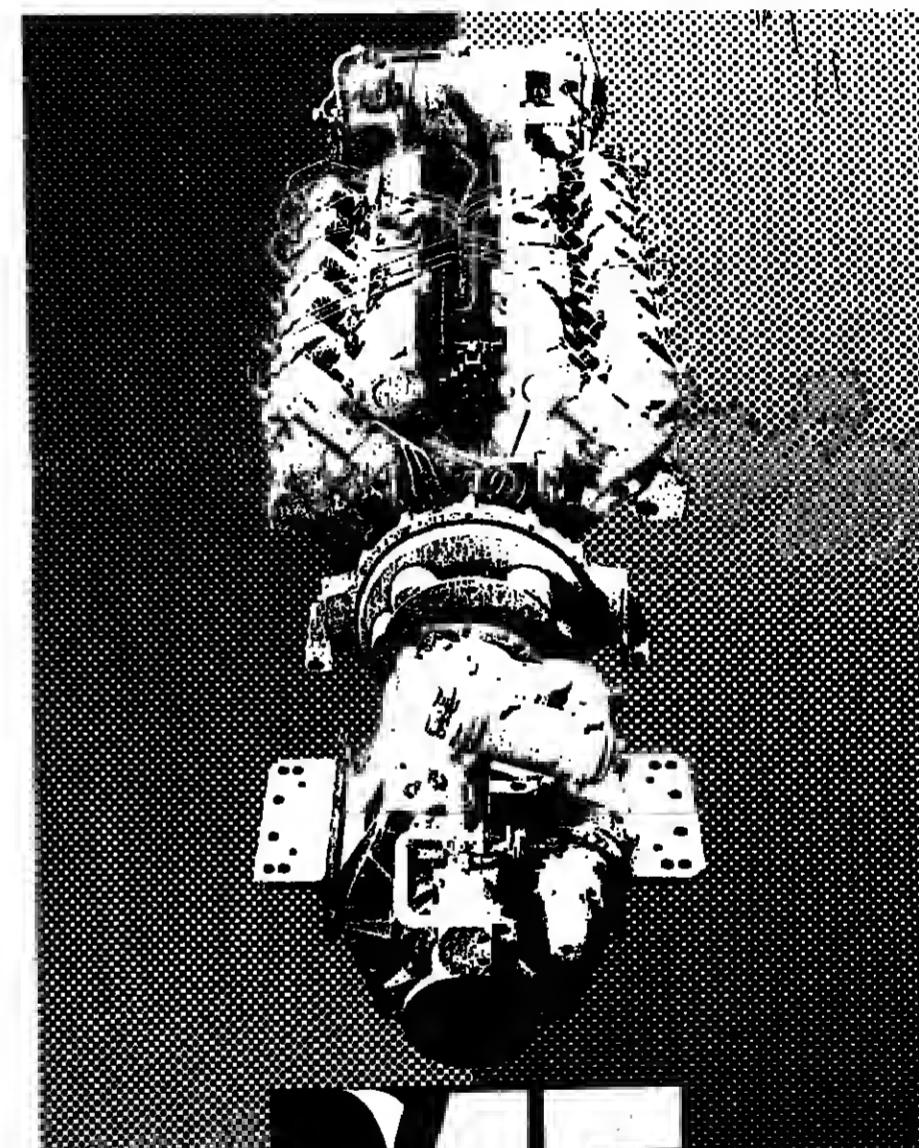
At all times, the diver is vulnerable to attack. To provide some protection, South Australian divers have developed a self-propelled shark-proof cage.

This vehicle is powered by an air-driven motor connected to a 1.7 cu metre compressor by a 91 metre long 12.7 mm air hose. After many trials, the most suitable compressor for the task was found to be a Volkswagen motor with two cylinders converted.

Prototypes of the new cage, known as the Ab-mariner, have been tested in commercial diving.

For a number of small South Australian fishing towns, it could help ensure the future of an activity which brings in more than \$A7 million a year.

# HOOKED!



P15

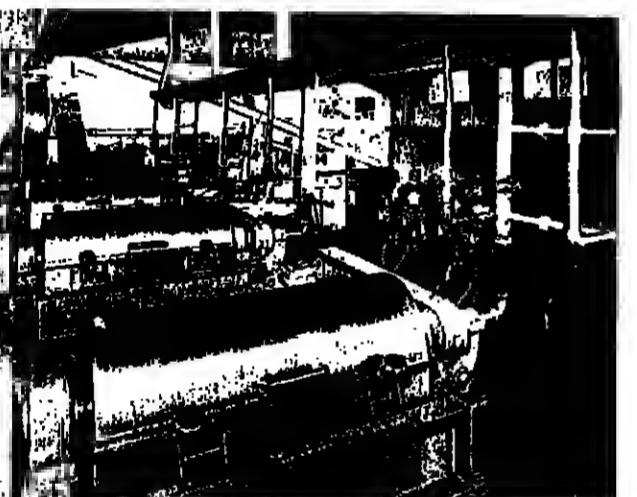
The P15 is a proven marine engine in the BAUDOUIN range. Like all BAUDOUIN engines, it is supplied as a complete propulsion unit to satisfy your particular requirements.

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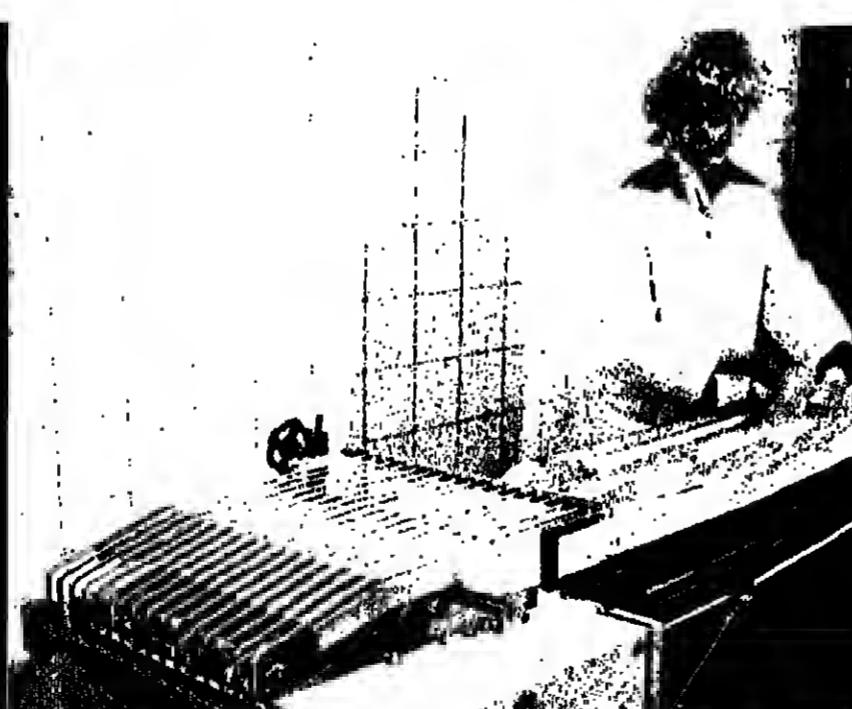
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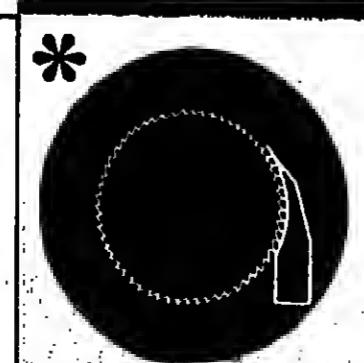
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# PELAGIC SHRIMPING

"MID-WATER trawling for shrimp can increase productivity per hour of effort by 50-100 per cent, although not necessarily increasing the number of hours that the net actually fishes."

This is the conclusion after a two-year programme of experimental fishing on the pink shrimp *Pandalus borealis* by Canadians in the Gulf of St Lawrence. It is part of the latest report (No. 101) by Allen Tohey and Jack Rycroft of the Fisheries and Marine Service, Halifax, Nova Scotia.

It supplements — almost supersedes — an earlier report (No. 701) published last year and describing trials carried out in 1976.

Both series of tests had the same aim — to increase the productivity of shrimp trawlers by making fishing worthwhile in the hours of darkness.

Traditionally, shrimp trawlers in this region lay-to at night because catches of a bottom trawl full off so much. This is known to be connected with the vertical migration of *P. borealis* during darkness — so why not go after them with a pelagic trawl?

### Importance

This is what the trials were about, and their eventual success has great importance wherever shrimp fisheries are affected by night time movement of this sort.

As far as the Canadian research was concerned, the intention was not only to increase the catch, but to shorten the length of the trip from the customary eight days, which is the maximum practical period for keeping this shrimp on ice. But there was an added bonus: shrimp caught off-bottom were larger and less liable to damage from the debris which can enter the cod-end of a bottom trawl.

Pelagic-caught shrimp were also found to have a higher meat yield after peeling and to have a much better appearance.

### Differed

The second series of trials, held in 1977, differed from the 1976 series in two major respects. The earlier work was aimed at a dual trawl arrangement, using a conventional low headline bottom shrimp trawl during the day and a pelagic trawl at night. The vessel used in 1976 was the *G.C. Suroi*, a

During 1977, some experimental fishing was also carried out in areas where

it was never suggested that

this larger class of vessel was necessary in order to have enough power for pelagic trawling. The intention was to scale down the *Scotia Cape's* trawl to suit smaller vessels — or to tow a large net between two boats, one of which would carry the electro-acoustic equipment.

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during the day and a pelagic trawl

at night. The vessel used in

1976 was the *G.C. Suroi*, a

conventional side trawler of

87 ft (26.52 m) overall and

with an engine of 365 hp.

In 1977, a more powerful

and more stable stern trawler

was chartered, the *Scotia*

Cape which has an overall

length of 118 ft (36 m) and

Caterpillar 765 hp engine.

### Installed

On this occasion, too, only pelagic trawling was carried out. On both occasions, however, netsenders and net drums were installed, while additional CRT equipment was introduced on the *Scotia* Cape.

It was never suggested that

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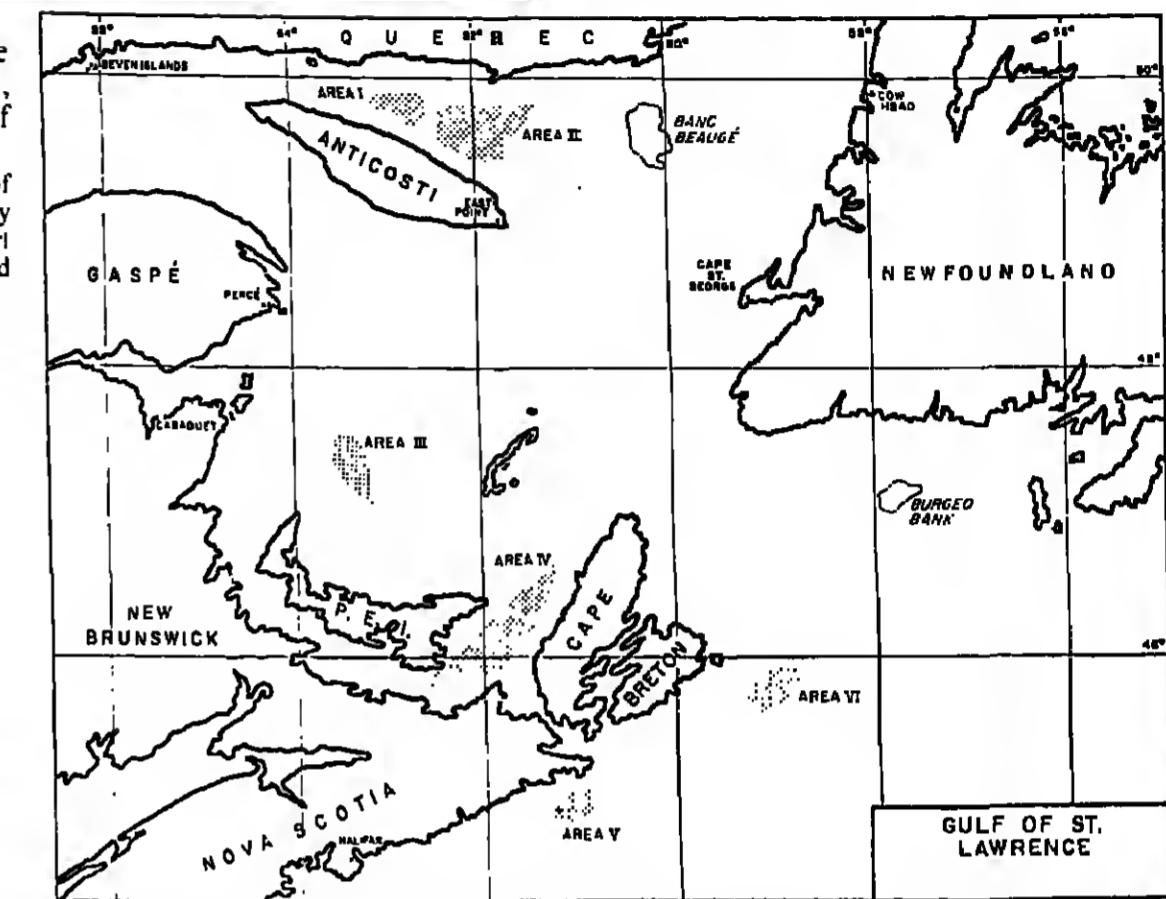
trawl to suit smaller vessels

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equipment.



shrimp had been reported by other fishermen. But none of these proved worthwhile and operations were eventually confined to the established Anticosti grounds, fishing in depths of 130-150 fathoms and making tows of up to five hours duration.

### Overcome

Finally, it was hoped that two problems experienced during the previous year might be overcome — damage from hushing sharks and the fact that shrimps were being meshed in the helles.

The former, it was hoped, might be discouraged by a large mesh netting barrier across the trawl, but this proved ineffective, reducing the catch of shrimps and creating spurious footrope echoes.

The meshing problem was thought to be the result of back-pressure within the net, caused by the restriction of water flow through the meshes. Additional netting in the trawl improved, but did not eliminate this problem.

### OVER—the test voyages, the gear used and the results.

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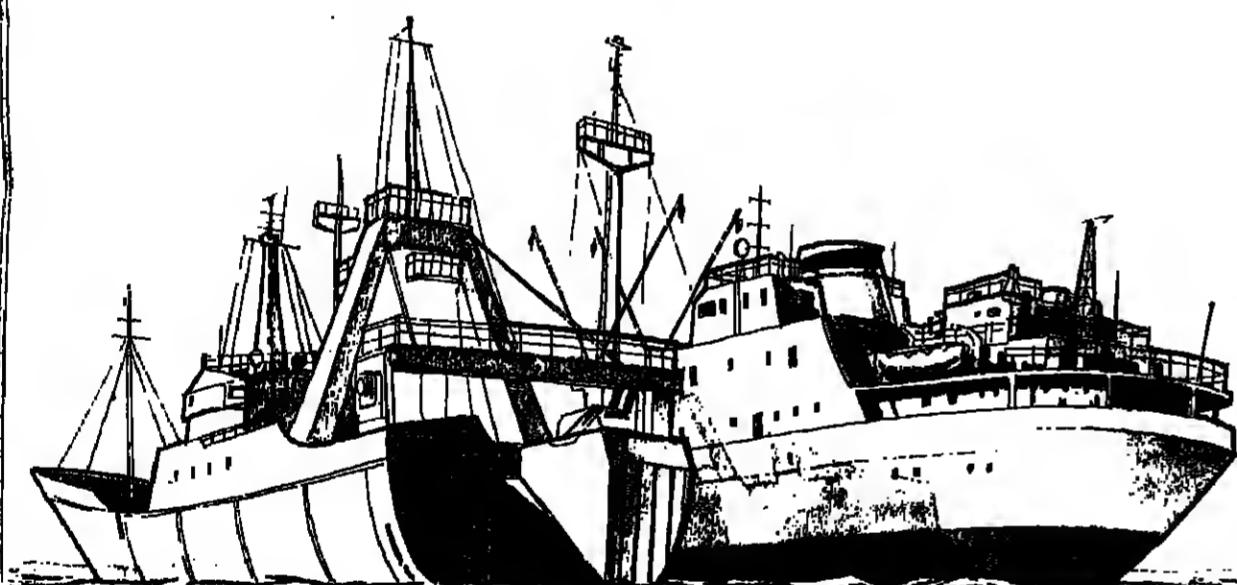
# The trials: gear, methods, results

## IN DETAIL...WHAT TECHNIQUES WERE TRIED AND TESTED



Untying a cod-end containing about 2,400 lb of shrimp.

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### AND THE VERDICT IS...A WINNER

By omitting the side roping on these sections, the meshes were made to pull lengthwise, so allowing the passage of more water volume, but retaining shrimp.

#### Too light

The Blacksprute trawl soon showed itself to be too light for this fishery. Tear-outs were frequent and the net was not intended for use by a stern trawler; friction on the stern ramp soon clutched the knots.

The mud rollers also were a source of trouble, creating false echoes from the headline transducer, so that this net was finally abandoned in favour of the 2462-mesh trawl — though not until much fishing time had been lost in repairs and adjustments.

By the second of her seven trips, the *Scotia Cape* was fishing well in depths of about 150 fathoms, using 60 fathom bridles and 450 lb (245 kg) weights on each lower bridle, five fathoms from the net.

#### No damage

The chain tickler could be made to trail along the bottom, causing shrimp to jump above the bosom footrope which followed 6 ft (2 m) behind. It enabled the pelagic net to fish shrimp which were on the bottom — and without damage to the net.

A final comparison indicated that the use of a mid-water trawl not only increased fishing productivity on *Pandalus borealis*, but reduced the by-catch of immature redfish from around 30 percent to only 2.5 percent — though this may vary, depending on whether the skipper seeks a mixed catch as a matter of fishing policy.

The report suggests that this lower figure may be due to

If the chain broke, it was easier to mend than a torn-out net. The report suggests that daylight fishing might be even further improved by the use of multiple chain ticklers.

Since fishing was often carried out close to the bottom, it was decided to try Polyvalent doors, which are more stable than Suberkrubs when in accidental contact with the bottom. But with these it proved necessary to increase engine speed and reduce warp length to achieve the same towing characteristics.

There was also some trouble in getting these doors right up to the gallows. When the winch shaft failed, this also was thought to be due to handling the Polyvalents and the remainder of the trials were carried out using five sq in (32 mm) in five sections.

At 150 fathoms, the echoes from shrimp were weak and the Simrad CI echo scope was able to show shrimp only in heavy concentrations and close to the bottom. As the shrimp rose with darkness, they could be detected only immediately above the bottom, before becoming too dispersed. It had to be assumed that they were in mid-water until the net was shot and the net sounder could verify the presence of shrimp — which did very well.

#### Readout

The procedure, therefore, was to use the CI echo scope to provide a rapid digital readout of water depth, a warning of change in bottom contour and an indication of shoals of fish such as capelin and redfish. The CRT display of the Shrimplupe gave an accurate indication of footrope position and height above the bottom, also showing shrimp and redfish actually entering the net.

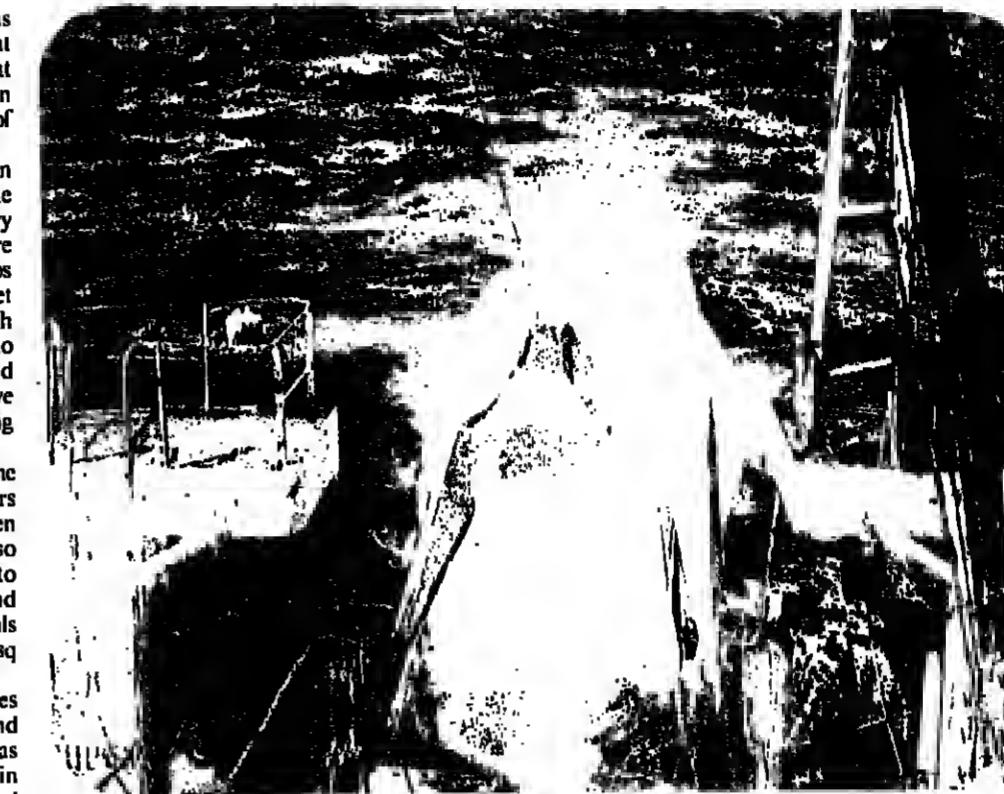
It was possible to distinguish between these two species and even to make a fair estimate of what was in the cod end.

The best trip of the series yielded 40,840 lb (18,563 kg) of pink shrimp and a saleable by-catch of 4,225 lb (1,920 kg) of redfish plus 965 lb (438 kg) of white shrimp. The 'mix' varied considerably throughout the trials and the best catches of pink shrimp were made during the latter part of the afternoon and evening, dropping off during the pelagic period after midnight and in early morning.

#### Less by-catch

A final comparison indicated that the use of a mid-water trawl not only increased fishing productivity on *Pandalus borealis*, but reduced the by-catch of immature redfish from around 30 percent to only 2.5 percent — though this may vary, depending on whether the skipper seeks a mixed catch as a matter of fishing policy.

The report suggests that this lower figure may be due to



The 2462-mesh trawl ants the ramp of the trawler "Scotia Cape."

the slow towing speed of 1-2 knots, which, it says, enables the young redfish to evade capture. But this does not explain why the mature redfish were still caught in reasonable quantities of around 28 per cent.

White shrimp (*Pasiphaea undulatoides*) made up about three per cent of the *Scotia Cape* catches. But this sometimes rose to 25 per cent of the shrimp caught, depending on the area being fished. There were too many of them to be sorted on board and they therefore went through the short plint with the pinks.

However, because their bodies are thinner, they mostly passed through the separator with the shells, the remainder being hand picked from the pink meats later.

#### More careful

White shrimp do not keep so well as pinks on ice, but it was found that more careful washing, draining and packing (in bags of less than the usual 10 lb) could largely overcome this problem.

As the count is reasonable (100-150 per lb), and meat yield is around 20 per cent, this species could become the basis of a new fishery, for the indications are that the stocks are growing in the Gulf of St Lawrence area.

Only three basking sharks were caught in the 1977 trials and they caused much less damage than in the previous year.

After two seasons' work it can be said with confidence that a practical technique has been evolved by the Canadians for improving the efficiency of shrimp trawling when shrimp rise off the bottom during darkness.

Where existing shrimp trawlers do not have the necessary power to tow a pelagic trawl, pair trawling

## FURTHER TESTS A SUCCESS

ASKED about further work on the project, Allen Tobey told *FNI* last month that tests were continued during the summer of 1978.

The 2462-mesh trawl was redesigned and cut down to suit Canadian commercial shrimp trawlers of around 85 ft (25.9 metres) and 550 hp.

In the new design, he said, "the opening is more rectangular or oval rather than circular as is common for our Diamond mid-water trawls."

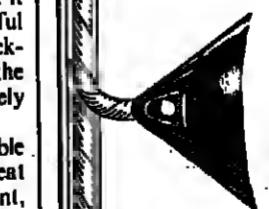
#### Wider sweep

This was done to create a lower opening but a wider sweep.

The trawl proved very successful and catches almost doubled. Those of the commercial ground trawls, with little or no small redfish by-catch.

According to Mr. Tobey, many fishermen in the Gulf of St Lawrence are interested in this method and have asked for technical assistance to carry out such an operation in future shrimp seasons.

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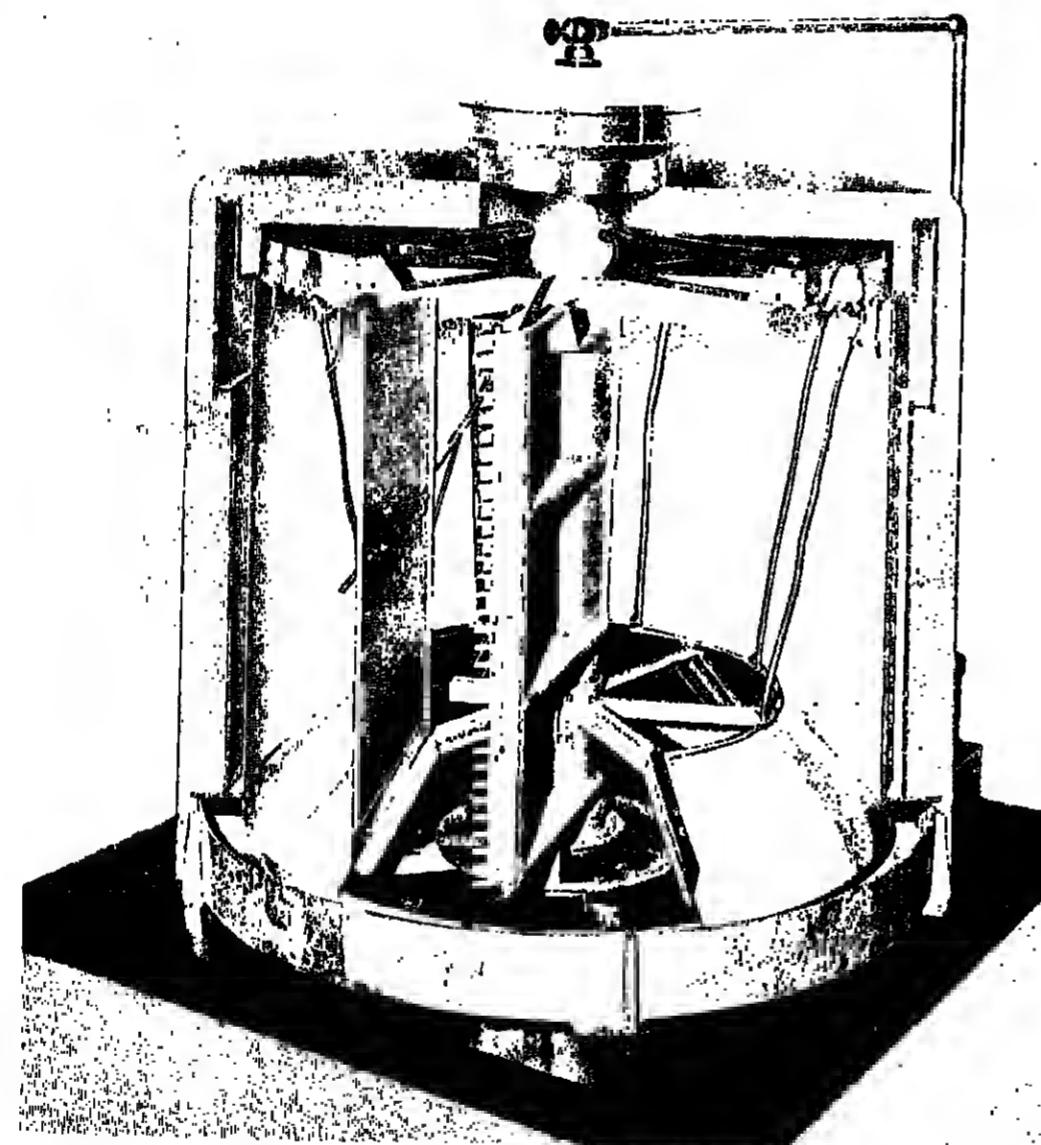
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## product news

METHODS • GEAR • EQUIPMENT  
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### Volvo Penta move HQ to Norway

VOLVO PENTA, the marine division of the Swedish car and engine maker, will be moving its centre of operations from Gothenburg to a site in Norway during 1979.

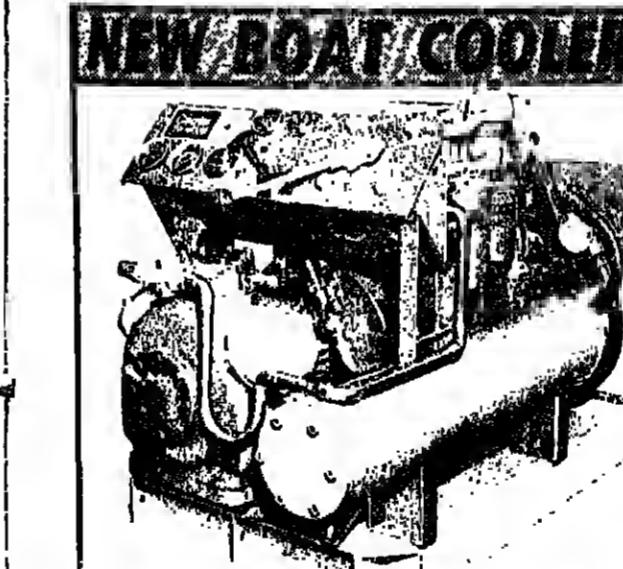
This move is the main part of a deal in which Norwegian interests are taking a 40 per cent stake in Volvo, providing new capital for the expansion of the company in Sweden.

The Norwegian Volvo plant will be located on the shores of Oslofjord. It will employ about 5,000 people and, initially, will concentrate on a new range of diesel engines in the lower horsepower range.

#### Closure

Volvo has also announced the closure by next summer of its outboard factory in Uppsala. It is not certain whether this work will also go over to Norway.

Volvo has been having talks with outboard manufacturers in Europe with the idea of



**CARRIER TRANSICOLD** Company of Syracuse, New York, USA, has developed a new refrigeration system for fishing boats. This Dolphin system maintains temperatures down to -20 deg F and is designed to produce 20,000 Btu at a fan coil evaporator return air temperature of -20 deg F.

The Dolphin has a Perkins diesel-powered condensing unit which includes the Carrier-designed OSD compressor providing 36.6 cu. in. displacement.

The unit's Undrive alternator assembly, mounted in line with engine and compressor, provides electrical power for the evaporator fan motor.

Built-in safety features such as automatic oil pressure and water temperature safety switches minimise chances of damaging equipment, says company sales manager William A. Bingham.

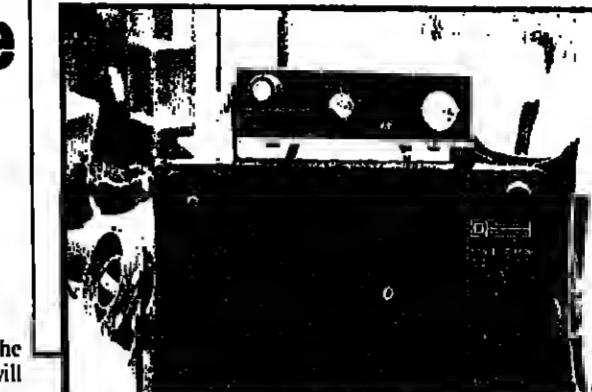
Further information about the new system from Carrier Transicold Company, PO Box 1319, Syracuse, New York 13201, USA.

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THE TWO RADARS in the range produced by Electronic Laboratories Ltd., the Seascans and the Seavoyor, are designed for small craft.

There have been many demands for a variable range marker to be incorporated but this has been omitted to save costs. Now a unit is available which can be added to these which can be added to these sets as an optional extra.

This new unit has been developed by the Electronic Laboratories agent in Hull, Locut Developments Ltd. It comprises a small box which is normally fitted to the top of the set but which can be located remote from the radar if required. The unit is wired into the main set and connection is quickly carried out by a radar mechanic.

There are three controls on

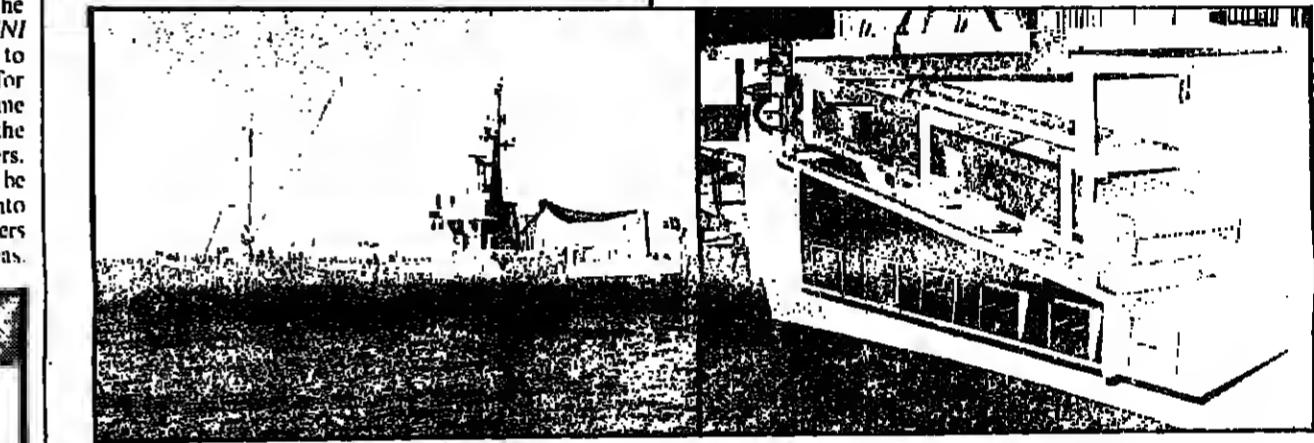
the unit. On the left is a brilliance control to determine the intensity of the LED digital range readout. In the centre is a range scale selector which is set to the nearest point to the range in use. On the right is the range control which moves the electronic indicator on the radar screen and at the same time changes the digital readout.

#### Integral

Variable range markers greatly extend the use of small boat radars and help in collision avoidance and navigation. It is anticipated that eventually they will become an integral part of all radar sets but, in the meantime, this unit meets the requirements.

Further information from Electronic Laboratories Ltd., Fleets Lane, Poole, Dorset.

### How one small firm makes the grade in Sweden



The Swedish purse seiner "Timor" is installing a new grader from the Stellan Ek factory. They are often custom designed.

ALMOST ALL the grading machines installed in Swedish herring boats come from a small family-owned factory in Taberg. Owner of the factory and designer of the machines is former fisherman Stellan Ek who began his business 19 years ago. He works closely with owners and fishermen ordering the machines and these are often custom-designed to suit a particular boat.

Fish are graded into six different sizes and capacities who began his business 19 years ago. He works closely with owners and fishermen ordering the machines and these are often custom-designed to suit a particular boat.

for shore plants. Most graders are used for herrings, but they are also being designed for handling inackerel and shrimp.

Another new development is a deck-sided machine with conveyor which is being installed in two big Swedish purse seiners.

kilos an hour. But the latest machine can grade 200 boxes an hour.

Stellan Ek's machines are a deck-sided machine with conveyor which is being installed in two big Swedish purse seiners.

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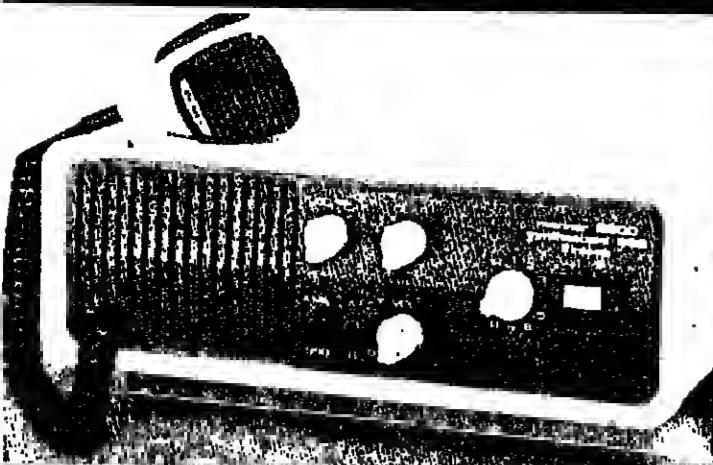
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Another new development is a deck-sided machine with conveyor which is being



The Mariner 2500 single sideband radio.

## THE MARINER 2500 STARTS NEW FAMILY

WITH ITS Mariner 2500, Intech Incorporated of California introduces the first of its new family of fully synthesised single sideband marine radio telephones. The set is equipped

with 23 Simplex, 11 Semi-Duplex channels plus one Simplex channel.

"Elimination of crystals or crystal changing," says Intech, "makes the Mariner 2500 the ideal marine SSB radio for wide ranging vessels."

The Mariner 2500 is of all solid-state design and is housed in a tough alodine finish aluminium chassis.

It has a dual 50 ohm antenna output connector compatible with an automatic antenna coupler so that a variety of whip or long-wire antennas can be used.

Power output of the Mariner 2500 is 12.5-watt PEP. Deliveries are scheduled to begin in early 1979.

Further information from Intech Incorporated, 282 Brokaw Road, Santa Clara, California 95050, USA.

### A WHALE RISES IN ORKNEY

THE ORKNEY GRP boatbuilder Halmatic (Scotland) Ltd. has changed its name to Orcantic Ltd. To highlight the new name, a company symbol has been designed, showing Orca the whale rising from the sea.

The company was re-organised last year and has since introduced new vessel designs, increased its workers and brought in new skills. In October, the fitting-out operation was moved to a new building where five or six vessels can be completed at the same time.

Last month, the Orcantic order book included three 36 ft., one 29 ft. and three 24 ft. "Skerries" boats, two of which were for export.

Considerable interest is also being shown in the company's 54 ft. boat and one will be delivered soon to a fisherman on the west coast of Scotland.

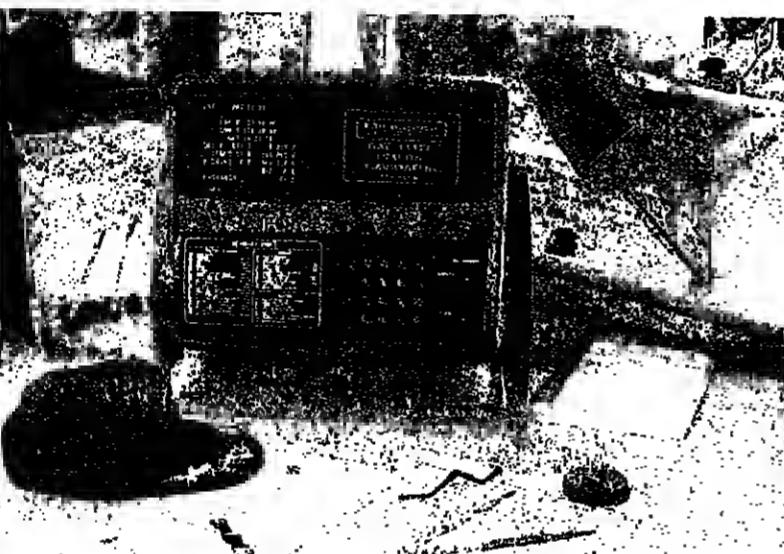


SINCE ITS introduction six months ago more than 150 tons of MacAllister Marley Mix have been sold. This cement mortar was developed for constructing ferro-concrete boats. It consists of a combination of carefully graded sharp sands, combined with Blue Circle Portland cement.

Mortar is the single most critical item in a ferro-concrete hull and this mix is designed to take the guesswork out.

MacAllister Ferro-Mix has been used for the hulls of two 13-metre fish carriers building for Guinea Bissau and is also being used in the hulls of a pilot scheme to develop ferro-cement fishing canoes.

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It's no secret. Stand-alone Omega has some bugs. And Satnav, the most reliable all-weather system available, still requires dead reckoning between fixes.

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The MX 1105 gives you redundant references — the accuracy and all-weather reliability of Satnav with the continuous-fix capability of Omega. Constant, up-dated position fixes from two independent references. And an alert if there is a significant discrepancy between them. In one very compact table, bulk-head or overhead mounted unit.

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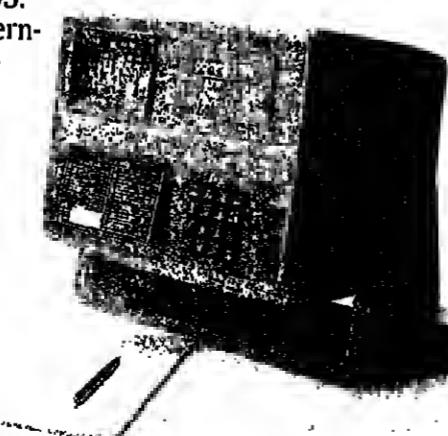
### Accuracy, Reliability, Worldwide Support.

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## product news

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## Lobster holding system expands

THE LOBSTER storage system installed at Fleetwood fish market in England has been expanded by Shellfish System Ltd. This doubles the capacity of the storage at the premises of David Towne, one of the market's leading merchants.

The storage system is built on a modular basis which allows the maximum storage capacity in the minimum space. Sections of the system can be closed down for cleaning or maintenance without disturbing other sections.

Lobsters are held in 18 GRP storage tanks each 9ft. long by 2 ft. wide. The tanks are mounted on a tubular steel frame which is made corrosion resistant by a PVC covering. They are mounted above the three reservoir tanks.

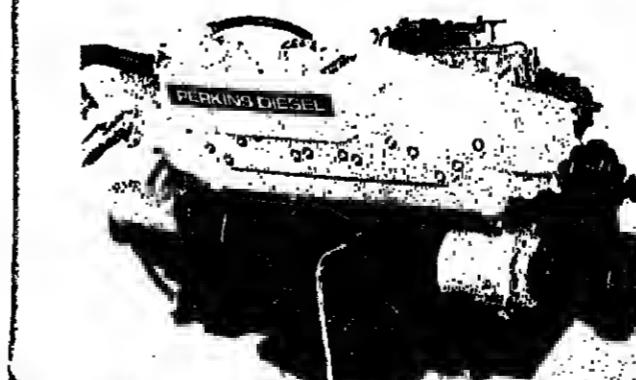
### Electric pumps

Duplicated one hp electric pumps circulate the fresh water which contains dissolved salts.

If there is a complete power failure, all tanks will drain into the reservoir which will ensure the survival of the lobsters for several hours.

A stainless steel cooling coil is installed in one of the reservoir tanks. This is coupled to a refrigeration compressor which is designed to maintain the circulating water at a temperature of around 8 deg. C. A comprehensive alarm system developed by Shellfish Systems gives warning of low water level, high temperature or pump failure. If one pump should fail the other pump automatically takes over the load.

## PERKINS DEBUT

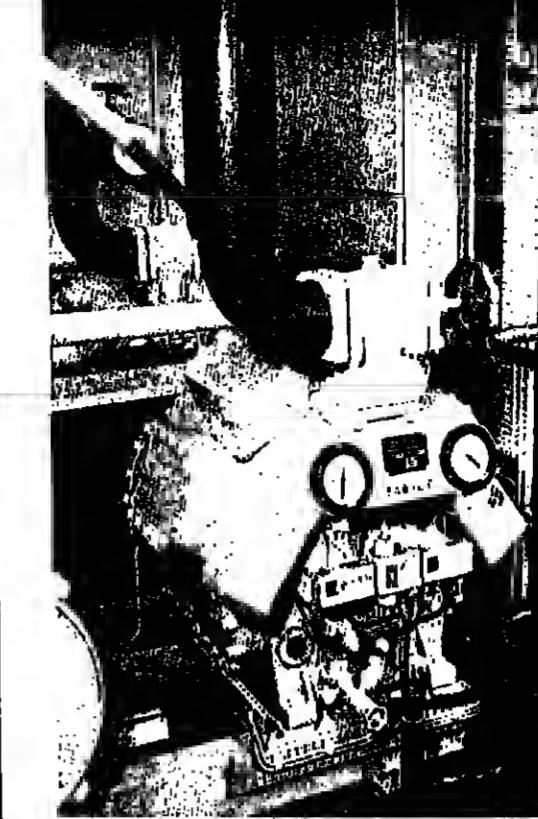


Naturally aspirated version of the Perkins Range 4 series.

PERKINS DIESELS chose the Southampton Boat Show to introduce a new range of marine engines based on a six-cylinder model.

Although the basic engine is common to all the new models, power outputs range from 98 hp to 185 hp.

The new range has been developed to meet the require-

Sabroe refrigeration unit in the *Marie Polaris*.

## Danish ship's RSW system

THE NEW DANISH trawler-purse seiner *Marie Polaris*, described in FNI in October, has a capacity for 1,200 tons of fish and waste and has a refrigerated seawater (RSW) system supplied by Sabroe.

Her RSW system consists of six tanks with a total capacity of 700 cubic metres together with an automatic Sabroe R22 plant to cool the seawater. This is made up of two identical but separate refrigerating units each with a Sabroe type SMC 108S compressor, CSTM marine condenser, receiver, drier with by-pass and seawater cooler.

While the ship is moving in

North Atlantic waters, the two compressors will be able to cool 115 tons of seawater from 15 deg. to 0.4 deg. C in five hours. After that the temperature can be maintained by one compressor.

Cooling of the seawater is done in two horizontal shell-and-tube type coolers which can be connected to each of the RSW tanks by a valve system. Seawater is circulated by two pumps, the pressure sides of which are connected with the coolers via filters.

Water is sent through valve systems under pressure to distribution pipes at the bottom of the tanks. It passes up through the tanks and is up to the tank top and back.

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# Bangladesh



A boat brings her fish to the water's edge at Cox's Bazaar, where Bangladesh has a new fish market building.

New promise in marine fishing is catch is estimated to have doubled in a decade

# HOPE AT LAST FOR A BETTER LIFE

**BANGLADESH**, approached through the estuarine labyrinth of the mighty Brahmaputra and Ganges rivers (ending as the delta of the Ganges), seems to have been created for fishermen to make a handsome living, with more water than land in sight.

And it is the home of people who live mainly on fish so far as animal protein is concerned — the 80 million of them consuming more than 10 kg per person per year.

Bangladesh, formerly East Pakistan and before that East Bengal, shares with India's West Bengal a taste for freshwater fish and by far the biggest part of the country's fish production comes from the vast area of waterways.

However, in recent years there has been a substantial increase in the marine catch which is now estimated to exceed 100,000 tons a year — about twice as much as was landed a decade or so ago. Even so, the inland waters catch is several times greater.

(I should mention that all the figures given here are tentative as there are no reliable statistics of catch and consumption).

My chief interest in a recent visit to Bangladesh was to see what was happening in marine fisheries, especially in view of the encouraging reports of the potential for such fisheries in the Bay of Bengal.

The silt carried into the sea by the Ganges and Brahmaputra rivers stretches for dozens of miles into the Bay.

But, although outwardly appearing the prospects for marine fishing are an encouraging development of the fisheries has been hampered by climatic conditions, mainly in the form of destructive cyclones which roar in from the Bay of Bengal, ravaging the country with winds and floods, destroying the fishing villages and shore facilities and killing thousands of people.

## Pressing

Yet, despite such forbidding difficulties, the need to develop marine fisheries is pressing as Bangladesh's vast and rapidly increasing population is ill-fed, being in particular short of protein and spears.

Fishing generally is conducted at the artisanal level with very little in the way of shore establishments and facilities. Indeed, there are only four main fish landing terminals — two at Cox's Bazaar and one each at Khulna and Chittagong.

Mostly, fish for home consumption are eaten fresh and are not iced. The catch is roughly handled without attention to hygiene, but fish for export are iced and frozen and handled with more care.

The effort to improve the handling of fish was apparent at the first place I visited, the new fish market at Cox's Bazaar.

Another important aspect of the country's fisheries is that about 95 per cent of the catch is landed by the small-scale sector. It is estimated that there are more than 150,000 full-time and over 90,000 part-time fishermen in this sector.

The main marine fishing season is from mid-September to mid-April and employs about 9,500 vessels. Of these,

REPORT AND PICTURES BY

**Cedric Day**

only about 1,200 are mechanised but the drive for mechanisation is being intensified. Many fishing methods are used, depending on the craft and gear available. Most of the fishing I saw was done with gill and stake nets, purse seines, long lines and spears.

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## Cleanest

It is, perhaps, the cleanest fish market in south-west Asia and is, to that extent, a "show piece." It has an ample supply of fresh water to sluice down the concrete floor of the open-air auction room but, unfortunately, the floor is not

sloped to drain off the water and waste.

As the market is situated at the water's edge the fish can be easily off-loaded by basket to the market floor. It is a busy place through which pass 15 to 20 tons of fish daily.

I talked to many fishermen, traders and workers at Cox's Bazaar and many other places and concluded that most of the country's fishing industry — that is to say, the commercial mechanised sector, not the local small, scattered artisanal fishermen — is in the hands of the richer fishermen and traders.

## Contract

These are often the one and same, a fisherman/trader who owns several boats and employs fishermen under contract. The men are paid 30 to 50 takaas (1 Tk equals 0.65 US \$) a month, provided with food on board and allowed two weeks holiday a year.

Such a contract provides a measure of security in a poor society where unemployment is rife, as the fisherman/trader is.

The effort to improve the handling of fish was apparent at the first place I visited, the new fish market at Cox's Bazaar.

## Cleanest

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sends the men to fish in big inland waters when the marine fishing season is over.

There are, of course, variations of this type of contract, including one under which the men get a lower wage but have a share of the catch. But the end result seems to be the same — a take-home pay of 30 to 50 Taka a month.

## Rent

More enterprising fishermen rent vessels. From talks with a number of them, I concluded that they earn more than those who work under contract — twice as much or even more when fishing is good. I also found that fishermen working their own boat, singly or in partnership, make more than those employed under contract.

While these earnings may seem very low they have an acceptable economic place and value in a country like



Small-scale fishermen work their nets from a sail boat near Dacca.

Bangladesh because of local conditions, living standards, the cost of living and the fact that work is hard to get.

The situation was put into

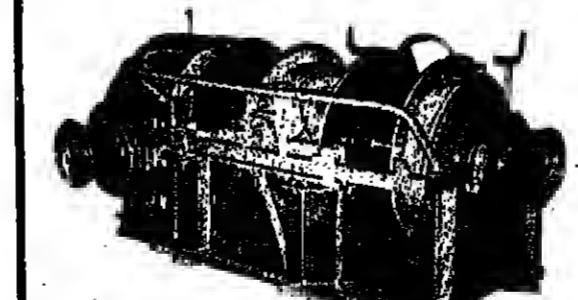
perspective for me when I met a group of men and boys squatting in the dust, repairing nets. Although they were

too poor, they told me, to be able to buy twine to make nets for themselves or to rent a boat so they have to scratch a living, earning a few taka by mending nets for other fishermen.

Their leader said: "If we could get nylon twine we could make nets and go fishing so that we could have fish to eat and earn enough money to buy other food and clothes."

## NEXT MONTH: An experiment in co-operation

# SIMPLY THE BEST



Type 86 combined seine and trawl winch.  
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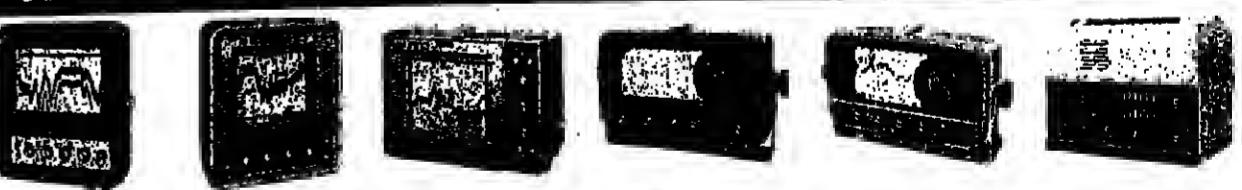
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Medium 0-160 0-360

Deep 0-320 0-720

Depth Fathom Meter

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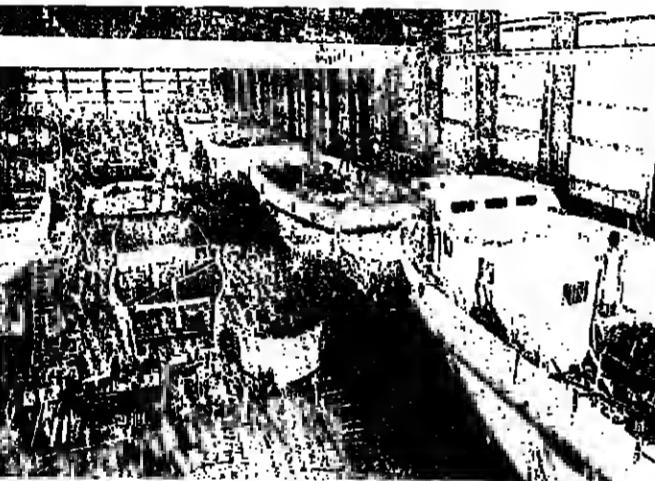
# FISHING FROM 400 VILLAGES

## INDIA'S ANDHRA PRADESH STATE NEEDS MORE POWERED BOATS

The state's fish industry produces 250,000 tons a year, but facilities for the village fishermen and their families are still woefully inadequate, despite efforts already made.

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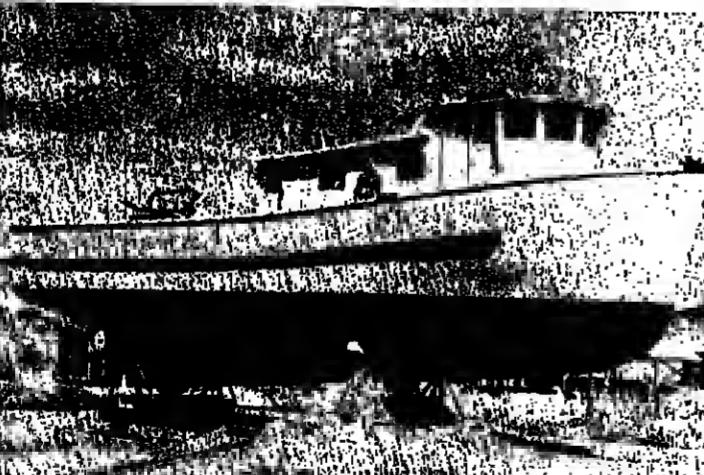
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# Bank aid for fishery study

THE ASIAN Development Bank is to provide a technical assistance grant to the government of Pakistan aimed at boosting exploitation of the country's fish resources.

This grant will cover the foreign exchange cost of a feasibility study by nine experts who will work with government staff and local consultants.

In the team will be specialists in fishery institutions and management, fishing operations, shore plant and marketing, aquaculture, fishery economics, and port engineering.

The study will also look at the need to segment earnings from fish exports and to make more fish available to local consumers. Aspects which the team will examine include mechanisation of coastal small-scale fisheries;

a pilot scheme for offshore purse seining and/or long lining for tuna; exploitation of demersal species by offshore trawlers; improving Karachi's fishing port; setting up a new fishery harbour in the Korangi Creek area near Karachi; establishing a GRP or ferrocement boatyard; and developing inland fisheries and farming in the provinces of Sind, Punjab and the North-West Frontier.

Under its Fifth Five-year Plan 1983, the Pakistan government sees fisheries as important to help improve dietary standards of the rural population.

The Asian Bank earlier provided a loan of US\$6.73 million to the Agricultural Bank of Pakistan to fund the foreign exchange cost of marine diesel engines, fishing gear and other items for the Fisheries Development Project. Some 400 boats equipped through the loan are now in operation.

## Mozambique gets trawlers from USSR

SOVIET refrigerated trawlers have been acquired by Mozambique and are expected to begin operating soon.

Initially, they will be manned by mixed Soviet and Mozambique crews but eventually local co-operatives will take them over. Two co-ops were recently set up in Maputo.

### Scientists

Soviet scientists have participated in research surveys off the Mozambique coast. Recommendations resulting from voyages by the research vessel *Aelita* have already been passed on to local fishery officials and fishermen.

The USSR also has a fisheries co-operation agreement with Angola and in 1977 some 30,000 tons was handed over from Soviet ships.

Iver Christensen introduce their new Midwatertrawl

For larger trawling speed the Midwatertrawl is now made with 122 inch mesh (180mm half mesh) in the wings and 160mm of belly, or with rope wings and 128 inch mesh in first section of belly. The big mesh or the ropes will also help with the jelly-fish problem. The nets are fitted with stainless steel combination ropes for better opening and mesh stability, and are easy to handle through the power block. This net is presently being used by Oceania to catch mackerel in the Katong and Skagerrak waters with great success. The net can be made either for pair trawl or midwater trawling and will be ideal for herring, mackerel, sprat and blue whiting fishing.

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## Survey off Sri Lanka

THE SEA around Sri Lanka has big fishery resources. Properly tapped, these could greatly contribute to the economic development of the country, said Gunnar Sætersdal (pictured right), Director of the Institute of Marine Research in Bergen, Norway.

Mr. Sætersdal was speaking at a press conference aboard the research ship *Dr. Fridjof Nansen* in Colombo port. The ship arrived in Sri Lanka after carrying out fish surveys in the north-west Arabian Sea.

She is now engaged in survey work around Sri Lanka,

According to Mr. Sætersdal,

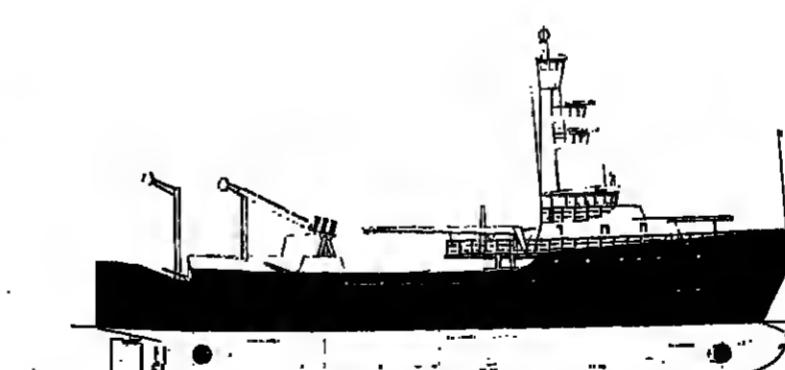
the findings of the survey will help Sri Lanka assess the potential of her fish resources and provide the information for decisions on types and sizes of vessels and shore facilities.

It will help identify new grounds and also contribute to what has already been learnt about known areas.

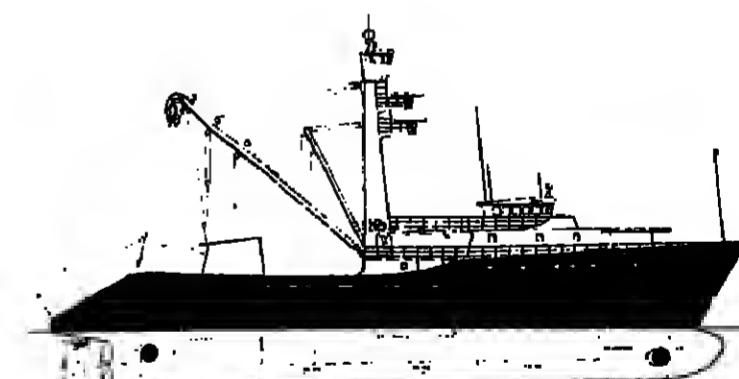
Iver Christensons  
Trawl Net Factory Ltd

OK-9890 Skagen, Denmark  
Tel. OB-441477  
Telex 67524

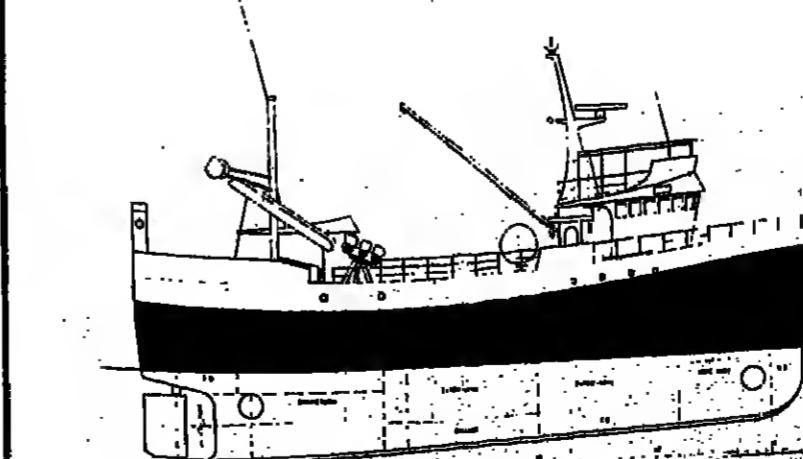
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Tuna seiner "American design"  
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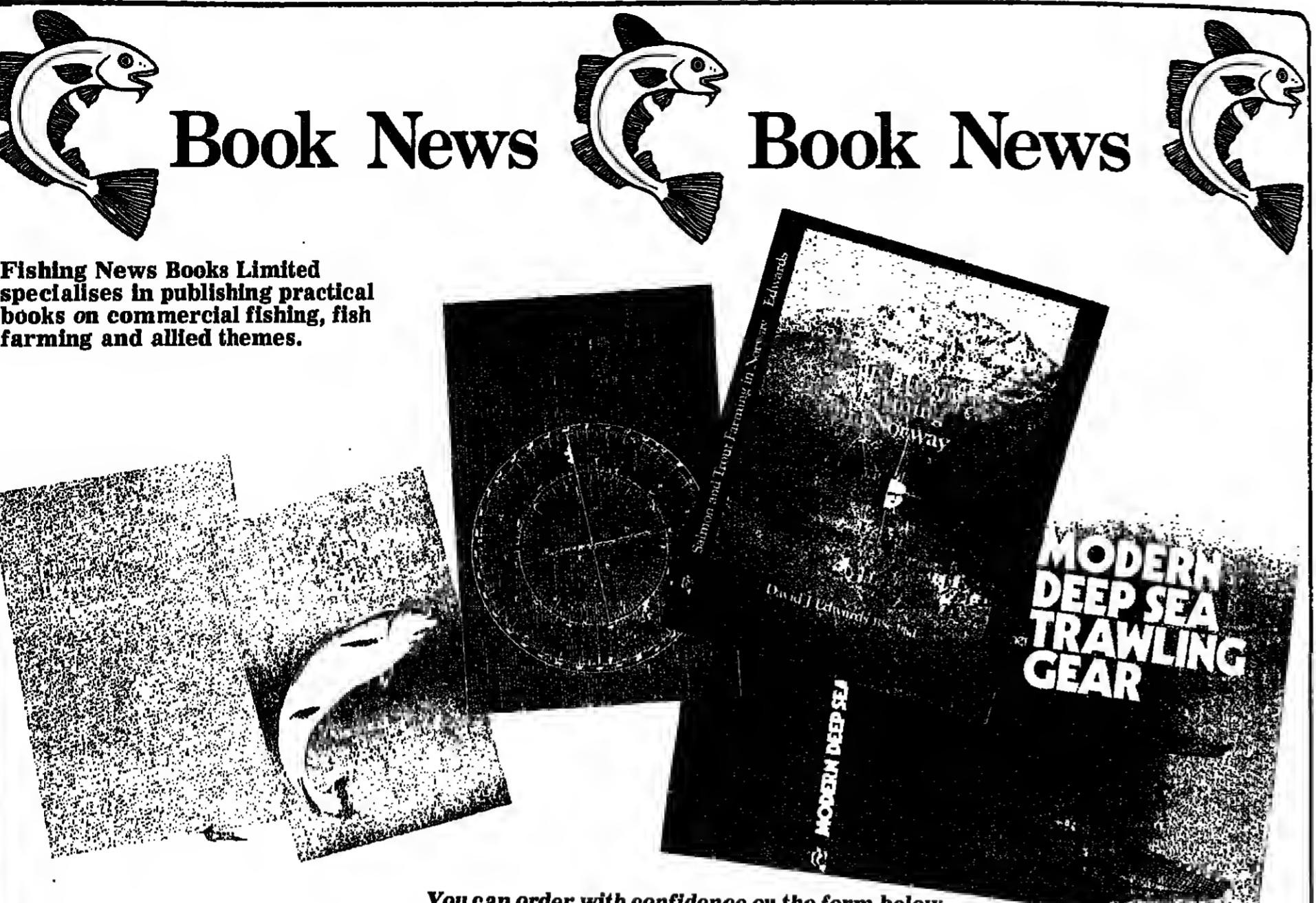
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## THE BOOKS PAGE

# BRITISH TEST TROPICAL PRAWN FARMING



Jumbo tiger prawn — promise for indoor culture.

BRITISH experiments on the indoor cultivation of tropical prawns have now reached the stage where the basic economics of farming may be considered on the basis of laboratory results.

This is the conclusion of a new leaflet by J. F. Wickens and T. W. Beard of the Fisheries Experiment Station in Conwy, Wales. It began with the European common prawn, the spot prawn from Canada and the giant freshwater prawn *Macrobrachium rosenbergii*.

On the prawn tried out at Conwy, the jumbo tiger (*Penaeus monodon*) from the Philippines has emerged as the outstanding species.

#### Tolerant

It was found that jumbo tiger grew to market size (35 g) in six months and survived well, showing little of the cannibalistic tendencies of some of its relatives in crowded conditions.

Yields of about 1.4 kg/m<sup>2</sup> may be expected six months after stocking.

Experiments showed that prawns readily accepted compounded diets prepared in the form of dry pellets and that some formulations gave good growth and survival, although further work would be needed before an economical pellet could be formulated.

Laboratory Leaflet No. 42, Prawn Culture Research, is obtainable from the Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, Suffolk, England.

#### Incentive

There is considerable incentive therefore to find viable methods of prawn culture and the MAFF station in Conwy has been active in the search since the mid-1960s.

## Fish pathology

WITH THE growth of aquaculture, fish pathology is fast developing into an essential industry discipline, with worldwide connections and recognised practitioners.

One of the best known of them is Dr. Ronald J. Roberts, of Stirling University, Scotland, and he has edited a valuable new book on the subject, which includes the work of 12 contributors. It brings together knowledge about the teleost fish, from many fields, with all points considered within the context of husbandry and economics.

The 328 pages of *Fish Pathology* include eight pages of colour plates. The book is published by Balliere Tindall, 35 Red Lion Square, London WC1R 4SG. Price £21, plus 40p for postage.



## American example will help all shellfish growers

Shellfish farmers from other temperate countries will find much to satisfy them here, and plenty of information on predator control, enclosures, raft versus bottom culture and harvesting techniques.

\**Practical Shellfish Farming* by Phil Schwind, published by International Marine Publishing Co., Camden, Maine, USA.

Is your economic intelligence up to date?



Read Number 6  
November, 1978

Fisher Economics Newsletter is a twice yearly publication of abstracts and articles by leading international specialists on all branches of the fishing industry.

F.E.N. is produced by the FISHERY ECONOMICS RESEARCH UNIT which has recently carried out economic investigations in Europe, South America, Africa and the Far East.

For inquiries about contracts and a full list of publications please write to Neil McKellar, Chief Economist, WHITE FISH AUTHORITY, 10 Young Street, Edinburgh EH2 4JQ.



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